



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

Kingman Field Office
2755 Mission Boulevard
Kingman, Arizona 86401
www.az.blm.gov

May 1, 2013

In Reply Refer To: 4180

Dear Reader:

The Kingman Field Office is responding to an application to renew the grazing permits on the Cerbat, Quail Springs, and Fort MacEwen allotments located north of Kingman, Arizona. The attached environmental assessment (EA) is available for review and comment by the permittee and interested public. The comment period for the EA ends on May 24, 2013. The EA is posted for review or download on the Arizona BLM NEPA website under Kingman Field Office project title: Cerbat, Quail Springs & Fort MacEwen Allotments Grazing Permit Renewal DOI-BLM-AZ-C010-2011-0017-EA at <http://www.blm.gov/az/st/en/info/nepa/log2011.html>.

The EA discloses the impacts to the natural and human environment from the proposed action and two alternatives. The proposed action was designed to implement a grazing system to improve or maintain rangeland health standards. Effective comments provide additional information useful in the analysis of impacts, provide relevant insight into aspects of the proposed action, or provide a reasonable alternative to the proposed action as provided by regulation or law. Please be as detailed as possible when commenting. The National Environmental Policy Act Handbook H-1790-1 section 6.9.2.1 provides guidance on how to construct substantive comments and is located at: <http://www.blm.gov/az/st/en/info/nepa.html>

The permittee and interested public participated in the consultation, coordination and cooperation process according to 43 CFR 4100.0-5. You must be on the list of interested public for these allotments if you wish to provide comments on the EA. You may become an interested public by identifying, in writing, a specific allotment or allotments in which you have an interest. Consultation, cooperation, and coordination (CCC) with the ranching community and interested public is the core of the public participation process and provides the BLM decision maker the opportunity to consider the most complete information before making decisions.

Please provide your comments to Don McClure, Assistant Field Manager either in writing at the address on this letterhead or by email to KFOWEB_AZ@blm.gov.

Sincerely,

/s/

Don McClure
Assistant Field Manager

**U.S. Department of the Interior
Bureau of Land Management**

**ENVIRONMENTAL ASSESSMENT
DOI-BLM-AZ-C010-2011-0017-EA**

**Cerbat, Quail Springs, and Fort MacEwen Allotments
Grazing Permit Renewal**



Kingman Field Office
2755 Mission Boulevard
Kingman, AZ
(928) 718-3700

May 1, 2013



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1 INTRODUCTION

1.1 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the potential environmental consequences associated with proposed grazing permit renewals and proposed range improvements for the Cerbat, Quail Springs, and Fort MacEwen (CQFM) grazing allotments which are located 20 miles northwest of Kingman, Arizona (Figure 1). Bureau of Land Management (BLM) Kingman Field Office (KFO) manages portions of the allotments which also include private and Arizona State Land Department lands. The CQFM allotments are managed as a complex combined together into the West Unit and East Unit divided by U.S. Highway 93. CQFM covers approximately 131,700 acres with BLM managing 86,122 acres, Arizona State Land Department managing 4,731 acres, and 40,849 acres of private land using acreage values calculated by GIS. Each of these allotments is in the “Improve” (I) management category. Allotments in this category have the greatest potential for improving existing resource conditions and show the highest return on range improvement monies invested. Allotments in this category will have first priority for range improvements, monitoring and development of Allotment Management Plans (AMPs) (BLM 1980a, 1980b).

1.2 Allotment Summary

The following is a summary of the current situation for the CQFM allotments.

Table 1. Current Situation Summary for Allotments

Public land acres in allotments	86,122 acres
Arizona State Land Department acres in allotments	4,731 acres
Private land acres in allotments	40,849
Kind of livestock	Cattle
Ephemeral or perennial	Perennial/Ephemeral
Plan area	Kingman Field Office
Current active use in animal units (AUs) ¹ and animal unit months (AUMs) ²	578 AUs or 6,344 AUMs ³
Suspended use (AUMs)	745 AUMs ⁴
Category ⁵	Improve

¹ AU is an animal unit which is equivalent to one cow.

² AUM is the amount of forage necessary for the sustenance of one cow or its equivalent for a period of 1 month (43 CFR 4100.0-5).

³ Active use means that portion of the grazing preference that is: (1) Available for livestock grazing use under a permit or lease based on livestock carrying capacity and resource conditions in an allotment: and (2) Not in suspension (43 CFR 4100.0-5).

⁴ Suspense means the temporary withholding from active use, through a decision issued by the authorized officer or by agreement, of part or all of the permitted use in a grazing permit or lease (43 CFR 4100.0-5).

⁵ Category: All allotments are categorized as either improve, maintain, or custodial.

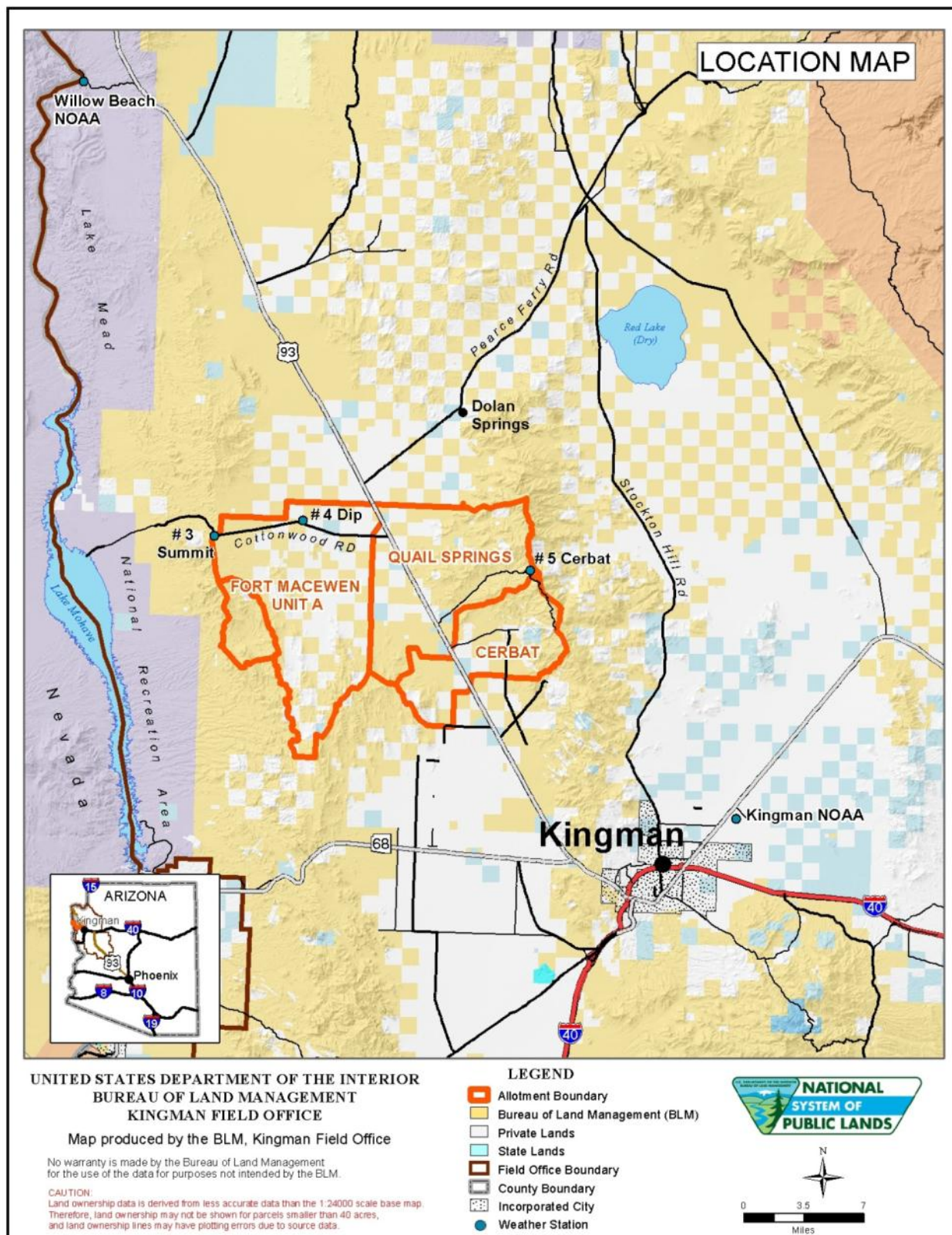


Figure 1: Location of Cerbat, Quail Springs, and Fort MacEwen Allotments

1.3 Purpose and Need for the Proposed Action

1.3.1 Background

The BLM is proposing to fully process the term grazing permits on the Cerbat (00020), Quail Springs (00062), and Fort MacEwen –Unit A (00034) (CQFM) allotments in accordance with all applicable laws, regulations, and policies. BLM renewed the permits with the same terms and conditions pursuant to Section 426 of Public Law 111-88, pending compliance with applicable laws and regulations for a 10-year term beginning October 1, 2009. Compliance with all applicable laws and regulations includes consultation, coordination and cooperation with affected individuals, interested publics, State, and Indian Tribes; completion of the applicable level of National Environmental Policy Act (NEPA) review; consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act; and ensuring that allotments are achieving or making significant progress toward achievement of land health standards .

1.3.2 Purpose and Need

The purpose of this action is to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the *Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management* (BLM 1997).

The need for this action is established by the Taylor Grazing Act (TGA), the Federal Land Policy and Management Act (FLPMA), and the *Kingman Resource Area Proposed Resource Management Plan (RMP)/Final Environmental Impact Statement* (BLM 1995), which require that the BLM respond to applications to fully process permits to graze livestock on public land. In detail, the analysis of the actions identified in the applications for grazing permit renewals and the alternative actions is needed to comply with the following planning documents.

BLM Arizona adopted the *Arizona Standards for Rangeland Health (Land Health Standards) and Guidelines for Livestock Grazing Management in all Land Use Plans* (Arizona S&Gs) which amended all Arizona BLM land use plans in 1997(BLM 1997)⁶. Land Health Standards for Rangelands should be achieving or making significant progress towards achieving the standards and to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards.

KFO completed a rangeland health assessment titled *Cerbat, Quail Springs and Fort MacEwen Allotments Rangeland Health Evaluation* (BLM 2010). The assessment indicated that some conditions in the allotments are in need of management changes to meet rangeland health objectives and standards as defined by the Arizona S&Gs (BLM 1997).

The Kingman RMP identifies resource management objectives and management actions that establish guidance for managing a broad spectrum of land uses and allocations for public lands in the KFO. The Kingman RMP allocated public lands within the CQFM Allotments as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Land Health Standards, allocation of forage for livestock use and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act and the Federal Land Policy and Management Act (FLPMA).

⁶ In 1996, BLM conducted a Statewide Land Use Plan Conformance Review for implementation of Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration, which included the Kingman RMP. Through this review, it was determined that the Kingman RMP and decisions adopted from Cerbat/Black Mountains Grazing EIS were consistent with implementation of Standards and Guidelines for Rangeland Health.

1.3.3 Decision to be Made

The Kingman Field Manager is the authorized officer responsible for the decisions regarding management of public lands within this allotment. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information for the authorized officer to make an informed decision whether to renew, renew with modifications, or not renew the permit and if renewed, which management actions, mitigation measures, and monitoring requirements will be prescribed for the CQFM allotments to ensure management objectives and Arizona Standards for Rangeland Health are achieved.

1.4 Conformance with Land Use Plan and Other BLM Plans

1.4.1 Kingman Resource Area RMP

Rangeland management decisions in the Kingman RMP which pertain to the proposed action include:

- GM-01⁷ Management of rangeland resources will be guided by the Cerbat/Black Mountains (1978) and Hualapai Aquarius (1981) grazing environmental impact statements and range program summaries (RMP, page 24). The objectives for the rangeland management program are listed in the Cerbat/Black Mountains (1978) and Hualapai Aquarius (1981) grazing environmental impact statements (RMP, Page 39).
- GM-10 Manage 21 allotments in the Improve (I) category (RMP page 461).
- GM-13 Improve wildlife habitat by providing more forage, cover, and water (RMP page 461 and objective from the Cerbat/Black Mountains (1978) grazing EIS Program Document page 1).
- GM-14 Reduce soil erosion and increase water infiltration by increasing vegetative ground cover and litter (RMP page 461 and objective from the Cerbat/Black Mountains (1978) grazing EIS Program Document page 1).
- GM-16 Sustain livestock production by providing more and better quality forage (RMP page 461 and objective from the Cerbat/Black Mountains (1978) grazing EIS Program Document page 1).
- GM-18 The proposed Allotment Management Plans(AMP, as described in the ES, will be reviewed and rewritten to provide for less complex and less costly plans based on site-specific conditions. This revision will be made in cooperation with the allottees, the Kingman Grazing Advisory Board, the State Land Department, the State Game Fish Department, and other concerned individuals and agencies. The AMPs will be dynamic documents, changing as necessary in response to the special conditions of each allotment (Program Document Page 2).
- GM-20 Utilization of key species will be limited to 50 percent. Annual adjustments in stocking numbers may be made on the basis of actual use experience acquired in reaching the 50 percent utilization level of the current year's growth of key species within sample areas. If required, adjustments will be made in authorized grazing use during subsequent billing period (Program Document page 2).

1.4.2 Other BLM Plans

The allotments addressed in this EA are located within the planning area of three different activity level plans which established forage allocations and adjusted utilization limits. The *Black Mountain Ecosystem Management Plan* (BMEMP) (BLM 1996) allocated forage for big game, wild horses and burros, and

⁷ RMP decisions are numbered and listed in a land use plan evaluation (BLM 2006).

livestock within a joint use area including part of the CQFM. The following goals and objectives apply to the public land in the joint use area within the CQFM Allotments.

Goals for the management of vegetation resources in the BMEMP include:

- Ensure that the physiological needs of plants are met,
- Increase the diversity of the native vegetative community,
- Increase the abundance of highly palatable (and therefore heavily used) native species.

Objectives for management of vegetation resources in the BMEMP include:

- Limit utilization within key areas (areas between 0.25 to 0.75 miles of permanent water sources) in the Black Mountain ecosystem over the life of the plan. Utilization limits or proper use factors for key plant species by big game, wild horses and burros, and livestock were set to meet the management objective as follows:
 - White bursage* 20%
 - Flattop buckwheat 15%
 - Big galleta 35%
 - Mormon tea 40%
 - Globe mallow 40%
 - Desert rock-pea 30%
 - Chuckwalla's delight 15%
 - Shrubby buckwheat 40%⁸
- Forage was allocated in the BMEMP to 30 percent burros, 30 percent cattle and 40 percent big game for a total of 9,500 animal unit month (AUMs).⁹

The *Wabayuma Peak & Mount Tipton Wilderness Management Plan, Environmental Assessment, and Decision Record* (BLM 1995a) contains the following objective:

- Conduct routine inspection and maintenance of range improvements (fences, spring developments etc.), located within the wilderness area, using non-motorized and non-mechanized means. According to the plan, all other maintenance will require prior BLM approval and additional environmental assessment. Emergency repair to range improvements using motorized or mechanized equipment, shall require prior written approval by the BLM (pg. 25, BLM 1995a).

Cerbat-Music Mountains Habitat Management Plan (HMP) (BLM 1983):

- Improve mule deer habitat by relieving limiting habitat factors such as water, forage, or cover (pg. 13).

1.5 Scoping and Issues

In response to an application for grazing, Kingman Field Office resource specialists wrote the *Cerbat, Quail Springs & Fort MacEwen Allotments Rangeland Health Evaluation* (BLM 2010) to determine whether AS&Gs are being met.

⁸ See Appendix A for a list of the common and scientific plant names.

⁹ The utilization limits set in the BMEMP apply to CQFM Key Areas 8, 11, 18, 20 and 21, located within the joint use area would be used as one of the criteria for determining if Standard 3 is met.

The start of work on the CQFM allotment rangeland health evaluation was announced at a project coordination meeting on December 2, 2008 in the KFO. The evaluation was conducted by the Issue Identification (ID) Team of BLM resource specialists assisted by the Range Resource Team (RRT) appointed by the Arizona Resource Advisory Council. Results of the Rangeland Health Evaluation were used to formulate the proposed action and alternatives. The evaluation found that Arizona Standards and Guidelines (AS&G) standards were not being met at some key areas as plant frequency data indicates that trend is down or static for warm season grass species at some of the key areas across all three allotments. During development of issues for this EA, during scoping meetings, field visits, and through public review of the CQFM Rangeland Health Evaluation the ID Team, other agencies, interested publics, and the grazing permittee suggested that potential causal factors for not meeting standards were persistent impacts from rangeland fire, drought, burros and existing grazing management. To remedy this condition, the team suggested that a change in stocking rate, utilization limits, and periodic rest during the growing seasons for cool and warm season plants in all three allotments could provide the opportunity for recruitment of perennial plants and grasses necessary to sustain healthy rangelands, wildlife habitat, and the ranch operation.

1.5.1 Consultation, Cooperation, and Coordination

A draft evaluation was sent out for public review and comment to individuals, organizations agencies. Comments were received from the grazing permittee, Mohave Livestock Association, Arizona Game and Fish Department (AGFD) and Western Watersheds Project. Comments were reviewed by an ID Team and incorporated into the final evaluation report where applicable. This EA reflects the comments that were incorporated into the updated evaluation. The timeline below represents activities that occurred throughout the evaluation process.

- December 16, 2008: Consultation, Cooperation and Coordination (CCC) letters were sent to interested parties announcing the start of work on the CQFM Allotment evaluations.
- December 17, 2008: CQFM field visit and monitoring with Sue Baughman (RRT), AGFD, Mr. Hamilton (grazing permittee), and BLM.
- December 18, 2008: Field monitoring work with AGFD.
- December 22, 2008: Field monitoring work with AGFD and permittee.
- December 23, 2008: Field monitoring work with AGFD.
- January 1, 2009: Meeting with permittee to talk to about livestock management on CQFM allotments.
- February 24, 2009: Field trip with AGFD, Sue Baughman (RRT), permittee and BLM.
- September 20, 2009: Field trip with AGFD and permittee.
- October 1, 2009: Meeting with permittee to talk to about CQFM evaluation.
- December 17, 2009: CCC letters sent to interested parties updating them on the ongoing work on the CQFM allotment evaluation.
- December 17, 2009: Field trip with AGFD, permittee and BLM.
- December 28, 2009: Comment letter received from Greta Anderson Western Watershed Project on the CCC letters.
- July 2009: Notification by telephone of the proposed grazing permit renewal on CQFM to Brian Wooldridge, Fish and Wildlife Service.

- March 9, 2010: Meeting with Elno Roundy, Bob Duey (Mohave Livestock Association; MLA) and the permittee to talk about CQFM allotment evaluation.
- April 6, 2010: Comment letter received from Greta Anderson Western Watershed Project on Rangeland Health Evaluation for the CQFM.
- April 14, 2010: Email from Trevor Buhr, Arizona Game and Fish Department on CQFM Rangeland Health Evaluation.
- April 15, 2010: Comment letter from Bill Hamilton on grazing management for CQFM Allotments.
- April 15, 2010 comment letter from Mohave Livestock Association on Rangeland Health Evaluation for CQFM Allotments.

1.5.2 Native American Consultation and Coordination

Kingman BLM and the Colorado River District entered into a Memorandum of Understanding (MOU) with Hualapai Tribe (BLM 2012). The MOU clarifies that consultation is not necessary for grazing permit renewals and existing range improvements. Proposed range improvements do not require consultation unless located on an archaeological site or area of cultural significance.

1.5.3 Issues Identification

The ID Team carefully considered comments by BLM specialists, interested publics, the permittee and affected agencies in order to identify issues relevant to issuing a 10-year grazing permit. The issues were identified during team meetings and in the process of rangeland health evaluation development dated March 12, 2010 (BLM 2010).

Area of Critical Environmental Concern (ACEC)

- How will ACEC values of desert bighorn sheep, mule deer, and wild burros be affected by changes to grazing management within the BMEMP Area of Critical Environmental Concern by competition for forage?
- Would changes to grazing management cause competition for forage, space and water within the Black Mountains Ecosystem Management ACEC designated to protect values of desert bighorn sheep, mule deer, and wild burros?

Climate Change

- How would permit renewal of a livestock operation contribute to greenhouse emissions?
- How can the grazing management plan best address the effects of climate change i.e. higher temperatures and drought on the production of key species?
- Would a change to the stocking rate help reduce effects of climate change on the condition of the key species?

Cultural Resources

- Would cultural resources be affected by livestock grazing either from direct trampling and/or the construction and maintenance of proposed range improvements?

Invasive Non-Native Species

- What effect would the reduction of key species by livestock have on the spread of invasive and non-native plant species?

- There is an assumption that when key species are grazed to the extent that vigor is poor, invasive plant species will increase in abundance. Is this happening on the allotment? What invasive species are present and how are they affecting the allotment? Will grazing management change the amount and types of invasive species?
- Is there evidence to support the assumption that the threat of wildfire is reduced when cattle graze red brome?

Lands and Realty

- Can the terms and conditions of the 1980 Allotment Management Plan still be implemented in areas where residential development is occurring such as in the Town of Chloride and Detrital Valley?
- Would new fencing improvements help to keep cattle off Lake Mead National Recreation Area (LMNRA)?

Livestock Grazing Management

- How would combining the allotments, resting/deferring the different pastures or changing livestock stocking rates affect the economics of the permittee's ranching operation (i.e. calf crops, calf weights at sale, total numbers of calves, total number of employees) and the local economy?
- How can we ensure all three of these "I" (Improve) Category allotments have an upward trend?
- If range improvements were maintained would, there be better control of livestock?
- What can be done to mitigate impacts to range improvements from residential development and recreation use?
- Would the implementation of the BMEMP objectives through the terms and conditions of the grazing permit, i.e. grazing decisions help improve habitat and rangeland health?
- How would a change in the kind of livestock in the Quail Springs allotment Headquarters Pasture from 1 animal unit to 10 horses (for two months) affect the permittee's grazing operation?
- How would the development of a new water facility in the Cerbat allotment affect livestock grazing management?
- How would the development of three exclosures affect livestock grazing management?

Riparian

- How would changes to grazing management affect riparian habitat at springs located in the allotments?

Vegetation

- What effect would the proposed changes in utilization limits have on vegetation.
- Would vegetative control sites, i.e. exclosures, near key areas, help to evaluate the effects of the proposed management actions?
- How is yearlong grazing affecting the plant community's recovery from wildfire?
- Are the vegetative objectives identified in the BMEMP plan being met?

- How would resting/deferring the different pastures or adjusting livestock stocking rates affect the productivity of the key species?

Wild Horses and Burros

- How would wild horses and burros in the Black Mountain Herd Management Area and the Cerbat Herd Area be affected by proposed changes in grazing management?

Wildfire

- Could grazing management reduce the potential of wildfire by red brome? Red brome is a driver in good years.
- How would the closure of pastures burned by wildfire affect grazing management and vegetation in these areas?

Wilderness

- What type of access is allowed in wilderness for livestock management?
- Would values for wilderness change as a result of changing livestock management?

Wildlife Including Special Status Species

- How would wildlife, including special status species be affected by proposed changes in grazing management?
- Would Sonoran desert tortoise, primarily found in the Twin Mills Pasture, be affected if this pasture is temporarily closed to grazing to allow native vegetation recovery after wildfire?
- What species of wildlife including special status species and migratory birds would be affected by proposed changes in grazing management?
- Would wildlife benefit from an improved grazing management plan that provides rest and deferment and accommodates climatic conditions such as drought?
- Are there any federally listed species present in the allotments that would be affected by changes to grazing management?
- Would resting the Twin Mills Pasture from livestock grazing benefit post-fire recovery of wildlife habitat?
- Could fencing be repaired in order to manage cattle and keep waters operating in all pastures for wildlife even when cattle are excluded from the area?
- Are all stock waters accessible to wildlife?
- How would leaving range waters on public lands open to wildlife year round affect wildlife?

1.6 Relationships to Statutes, Regulations, or Other Plans

Table 2 lists statutes, regulations, policy and local area planning documents germane to the analysis area, proposed action and alternatives.

Table 2. Statutes, Regulations and Other Plans Relevant to Proposed Action

Proposed Action Element	Authority
Air Quality	Clean Air Act of 1970
Climate Change	Department of Interior Order No. 3225 "Evaluating Climate Change Impacts in Management Planning"
Cultural Resources	National Historic Preservation Act of 1966
Cultural Resources	Native American Graves Protection and Repatriation Act of 1990
Livestock Grazing	National Environmental Policy and Management Act of 1969
Livestock Grazing	Taylor Grazing Act of 1934 as amended
Livestock Grazing	Federal Land Policy and Management Act of 1976 as amended
Livestock Grazing	Public Rangelands Improvement Act of 1978
Livestock Grazing	Grazing regulations under 43 CFR 4100 and associated BLM Manual policy
Water Quality	Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
Wild Horses and Burros	Wild Free-Roaming Horse and Burro Act of 1971
Wildlife	Endangered Species Act of 1973
Wildlife	Migratory Bird Treaty Act of 1918
Wildlife	Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
Wildlife	Sonoran Desert Tortoise Interagency Management Plan
Wilderness	The Wilderness Act of 1974

2 PROPOSED ACTION AND ALTERNATIVES

Development of alternatives for this EA was based on the results of interdisciplinary rangeland health assessments conducted by the BLM. As a result the action alternatives were developed to address the need for changes in authorized uses and for new range improvements. The current grazing system is described under the Alternative 2 No Action as a baseline for comparison to the action alternatives (Table 3).

The ID Team drafted a grazing management alternative which provides rest during both the spring and summer growing seasons, as shown in Table 4.

Table 3. Comparison of Proposed Action (Alternative 1) to Alternatives

Alternative	Number of Livestock	Deferment/Year	Moves	Proposed Range Improvements
Alternative 1 Proposed Action	203 cattle 10 horses (horses two months only)	East 3 of 5 West 2 of 3	3 per year	Repair all West Unit fences. Develop water facilities in East Unit Cerbat Pasture.
Alternative 2 No Action	578 cattle	None	0	Implement Terms and Conditions of 1980 AMP
Alternative 3 No Grazing	0	N/A	N/A	None

2.1 Alternative 1 Proposed Action

The proposed action is to reissue three 10-year permits in conformance with the Kingman RMP and related plans. The proposed action replaces the 1980 Allotment Management Plan (BLM 1980). The management practices proposed under this alternative were designed to manage the three allotments for livestock grazing, provide for a diversity of wildlife and plant species, maintain functioning ecosystems, and maintain and/or improve ecological condition in order to meet standards of rangeland health.

The Proposed Action consists of three parts: renewal of the grazing permits, construction of new/maintenance of existing range improvements needed to implement the grazing plan, and construction of three exclosures.

The CQFM Allotments would be managed as two units, one east and one west of U.S. Highway 93 (US-93; Figure 2). The names of the pastures in the east and west management units are listed in Table 5. Current pasture boundaries and existing fences are shown on Figures 2 and 3, respectively.

2.1.1 Terms and Conditions

Renew the three perennial/ephemeral grazing permits for CQFM allotments for a period of 10 years with the following Terms and Conditions:

Table 4. Proposed Action Grazing System Schedule, Years 1–5

Pasture Name	Herd Size (AUs)	AUMs/Pasture	AUMs/Remain	Start Date	End Date	Grazing Days
Year 1 West Unit Projected Schedule						
Sugarloaf Highway	102	362	5	March 1	June 15	107
Black Tank Valley	102	448	40	June 16	Oct. 15	122
Lost Cabin Squaw Pocket	102	498	39	Oct. 16	Feb 28	136
Twin Mills	Rest	Rest	Rest	Rest	Rest	Rest
Year 1 East Unit Projected Schedule						
House /Big Wash	90	317	2	March 1	June 15	107
E. Big Wash/ Quail Spr.	90	294	24	June 16	Sept. 15	92
Marble Canyon/ Cerbat	90	519	24	Sept.16	Feb 28	166
Year 2 West Unit Projected Schedule						
Black Tank Valley	102	448	40	March 1	June 30	122
Lost Cabin Squaw Pocket	102	498	39	July 1	Nov. 15	136
Sugarloaf Highway	102	362	5	Nov. 16	Feb 28	107
Twin Mills	Rest	Rest	Rest	Rest	Rest	Rest
Year 2 East Unit Projected Schedule						
Big Wash/ E. Big Wash	90	284	14	March 1	May 31	92
Quail Spr./Marble Canyon	90	416	11	June 1	Oct. 15	137
House / Cerbat	90	430	25	Oct. 16	Feb 28	136
Year 3 West Unit Projected Schedule						
Lost Cabin Squaw Pocket	102	498	39	March 1	July 15	137
Sugarloaf Highway	102	362	5	July 16	Oct. 30	108
Black Tank Valley	102	448	40	Nov. 1	Feb. 28	120

Pasture Name	Herd Size (AUs)	AUMs/Pasture	AUMs/Remain	Start Date	End Date	Grazing Days
Twin Mills	Rest	Rest	Rest	Rest	Rest	Rest
Year 3 East Unit Projected Schedule						
E. Big Wash Quail Spr.	90	294	24	Mar 1	May 31	122
Marble Canyon / House	90	419	14	June 1	Oct. 15	137
Big Wash / Cerbat	90	417	12	Oct. 16	Feb 28	136
Year 4 West Unit Projected Schedule						
Sugarloaf Highway	102	362	5	March 1	June 15	107
Black Tank Valley	102	448	40	June 16	Oct. 15	122
Lost Cabin Squaw Pocket	102	498	39	Oct. 16	Feb 28	136
Twin Mills	Rest	Rest	Rest	Rest	Rest	Rest
Year 4 East Unit Projected Schedule						
Quail Spr./ Marble Canyon	90	416	11	March 1	July 15	137
House/ Big Wash	90	317	2	July 16	Oct. 31	108
E. Big Wash /Cerbat	90	397	37	Oct. 16	Feb 28	136
Year 5 West Unit Projected Schedule						
Black Tank Valley	102	448	40	March 1	June 30	122
Lost Cabin Squaw Pocket	102	498	39	July 1	Nov. 15	137
Sugarloaf Highway	102	362	5	Nov. 16	Feb 28	106
Twin Mills	Rest	Rest	Rest	Rest	Rest	Rest
Year 5 East Unit Projected Schedule						
Marble C House/	90	419	14	March 1	July 15	137
Big Wash/ E. Big Wash	90	284	14	July 16	Oct. 15	92
Quail Spr / Cerbat	90	427	22	Oct. 16	Feb 28	136

- The West and East Management Units would be managed under a deferred rotation grazing system in which cattle would be moved three times a year (Figures 6, 7, and 8).
- Flexibility: The grazing schedule would be used as a template with pasture rest and the rotation schedule being subject to change year to year, based on climatic conditions, physiological needs of the plants, as well as site specific monitoring data. The rancher would contact the BLM prior to making moves outside of the schedule and would keep records of when and where livestock were actually moved, and provide the actual use information to the BLM each year. The final decisions concerning moves outside the scheduled use periods would be made by the BLM authorized officer.
- Annual Meetings: An annual meeting between BLM and the grazing permittee would be conducted to discuss previous years monitoring, moves, etc. and the coming year's grazing schedule and climatic conditions. Emergency situations such as loss of a water facility which would necessitate immediate removal of livestock from an area would be handled on a case by case basis and would involve consultation with the above parties. The final decisions concerning the annual meeting recommendations and emergency situations would be made by the BLM authorized officer.
- The combined authorized stocking level for both the West and East Management Units under Alternative 1 would be 203 cattle and 10 horses* (two months only). This stocking level would be adjusted based on monitoring data in relationship to resource management objectives. Appendix B provides criteria for the stocking rate analysis. *(One horse equals 1.25 AUs).
- Areas within CQFM that fall within the "joint use area" would have utilization limits as in the Black Mountain Ecosystem Management Plan (BLM 1996), and presented in *Section 1.2, Conformance with Land Use Plan* of this document. These limits would become a part of the terms and conditions of the grazing permit. The key areas located within the joint use area are 8, 11, 18, 20, and 21.
- All key species at key areas outside of the Joint Use Area of the Black Mountain Ecosystem would have a range of use between 30 percent and 40 percent with an average use limit of 35 percent over three years. Livestock moves would be necessary when the above use limits on key species are reached.
- The permittee would have one year from date of the permit renewal to repair the Lost Cabin Squaw Pocket fences or these pastures would be closed to grazing.
- No ephemeral use would be authorized for the 10 year grazing period, i.e. life of the permit.
- The permittee would be required to have ear tags on all livestock authorized to graze.
- A change in kind of livestock from cattle to horses would be included on the term permit for the Quail Springs Allotment to allow the permittee to have 10 head of horses in the Quail Spring Pasture near his headquarters for up to two months each year only when cattle are in the pasture according to scheduled pasture rotations.
- The permittee would provide actual use information by pasture including number of animals, kind and class of livestock, and period of use.
- All waters located on public land would be left on and functional when cattle are not in the pasture.
- All new cattleguards would be designed to prevent entrapment of small animals including desert tortoise.

Table 5. Alternative 1 Proposed Pastures in the West and East Management Units

West Management Unit Pastures	East Management Unit Pastures
Twin Mills Lost Cabin/Squaw Pocket Black Tank /Valley Sugarloaf /Highway	Big Wash East Big Wash Quail Spring Marble Canyon House Cerbat

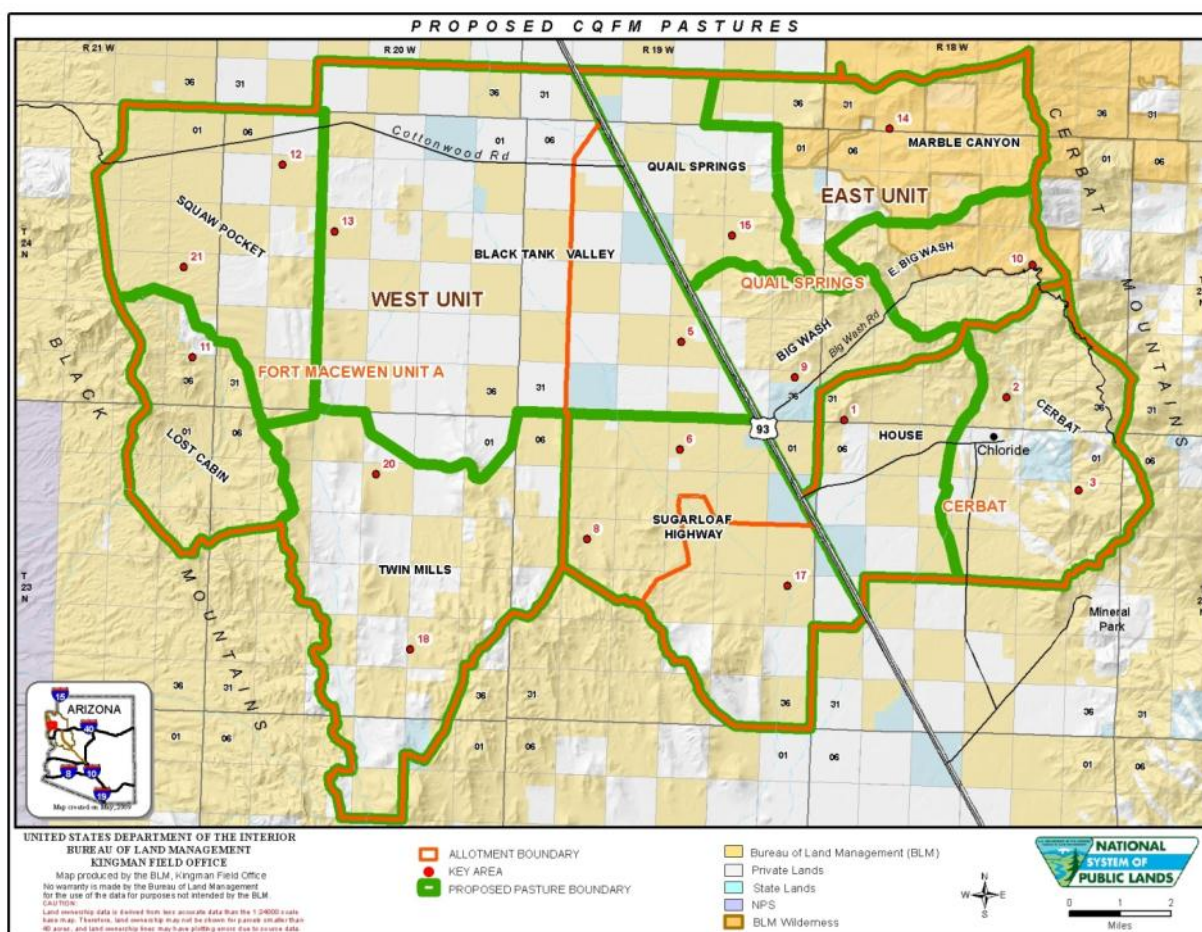


Figure 2. East and West Units and Pasture Boundaries within the Allotments

2.1.2 Livestock Management

West Management Unit

Livestock management under Alternative 1 provides grazing deferment in the spring and summer for all pastures two out of three years (Table 4). In order to implement Alternative 1, all boundary fences must be repaired.

- Close the Twin Mills Pasture to cattle grazing until the cover and frequency objectives relating to the desired plant community of Standard 3 are met. The objectives will be considered met when perennial vegetative cover at Key Area 20 reaches 15 to 20 percent. Current monitoring data indicates perennial vegetative cover at Key Area 20 at 9 percent.
- Combine the Sugarloaf and Highway 93 pastures into one pasture named Sugarloaf Highway Pasture.
- Combine the Valley and Black Tank pastures into one pasture named the Black Tank Valley Pasture.
- Squaw Pocket and Lost Cabin pastures would remain separate but managed as one unit i.e., grazed at the same time.

East Management Unit

The proposed livestock management under Alternative 1 provides grazing deferment in the spring and summer for each pasture three out of five years. Once perennial watering facilities for livestock are developed in the Cerbat Pasture, all pastures would receive spring and summer grazing deferment two out of three years.

- Limit grazing use in the Cerbat Pasture to fall and winter until a perennial watering facility for livestock is developed in this pasture.

2.1.3 Existing Range Improvements

The following currently permitted range improvements would be repaired or modified within one year of the date of the decision for the issuance of the permit or one or more of these pastures would be closed to grazing and AUMs for these pastures would be suspended.

- Relocate the existing fence and realign the road across Lost Cabin Wash along the west boundary of the Lost Cabin Pasture out of the wash to a nearby upland location. The gate would be replaced with a cattleguard (Figure 4). The road in Lost Cabin Wash provides remote access to the National Park Service lands and therefore receives a lot of vehicle use. Because of this activity, the gate at this location is often left open which allows cattle to wander onto the National Park.
- The boundary fence to the west of Lost Cabin Spring needs to be extended approximately 0.5 miles to the south and tied into a natural boundary. The location of this fence is T24N, R21W, sections 22, 23 and 26 (Figure 4).
- The fence along the west side of Squaw Pocket Pasture and the west side of Lost Cabin Pasture need to be maintained or reconstructed.
- Repair West Unit boundary fences between Fort MacEwen Units A and B.
- When fences are realigned, extended, or reconstructed they would be built and then maintained using BLM fencing standards (BLM Fencing Manual H-1741-1). Standards would be different depending on the big game species present (bighorn or mule deer).
- Maintenance or reconstruction of fences in tortoise habitat would be conducted from existing roads or on foot or horseback where road access is not available. No off-road vehicle would be authorized.

- To improve riparian habitat and make progress towards meeting Standard 2 at Big Wash Spring, the existing fence would be repaired or replaced. The fence around the spring would be approximately 100 feet long by 50 feet wide and built and maintained by the BLM using BLM fencing standards (BLM Fencing Manual H-1741-1). This would exclude livestock from the spring source and riparian vegetation, but allow for wildlife access. The location of this spring is T24N, R18W, section 17 (Figure 3).
- The Sugar Loaf Seeding Exclosure (Range Improvement #035058) fence would be modified. Two gates at each end of the road through this exclosure are often left open by the general public allowing livestock access into the exclosure. In order to keep livestock from grazing within this exclosure fence would be relocated to the north side of the road. Moving the fence to the north side of the road would remove the road from the inside of the exclosure thus eliminating the need for gates. The location of this exclosure is T 23N, R19W, sections 14 and 15 (Figure 3).

2.1.4 Proposed Range Improvements

- Install a cattleguard along the road down Lost Cabin Wash adjacent to the fence that separates the Lost Cabin and Squaw Pocket pastures. The location of the new cattleguard is T24N, R21W, section 23 (Figure 4).
- Drill and equip a well in the Cerbat Pasture. The well would have an approximately 12 foot windmill, 10,000 gallon storage tank and 500 gallon trough for livestock and wildlife. The BLM trough would meet wildlife standards and not stand higher than 20 inches from ground level and be equipped with a wildlife escape ramp. All of the facility would be colored to blend with the surrounding landscape. The location of the new well is T24N, R18W, section 34 SESE ¼ (Figure 5).

2.1.5 Exclosure Construction

Three exclosures would be constructed in order to exclude livestock grazing from those locations: near Key Area 5 in the Black Tank Pasture; near Key Area 12 in the Squaw Pocket Pasture; and near Key Area 20 in the Twin Mills Pasture. These exclosures would be approximately 10 acres in size and would be used as control areas to compare grazed and ungrazed areas within these pastures. The BLM would build and maintain the exclosure fences using BLM fencing standards (BLM Fencing Manual H-1741-1).

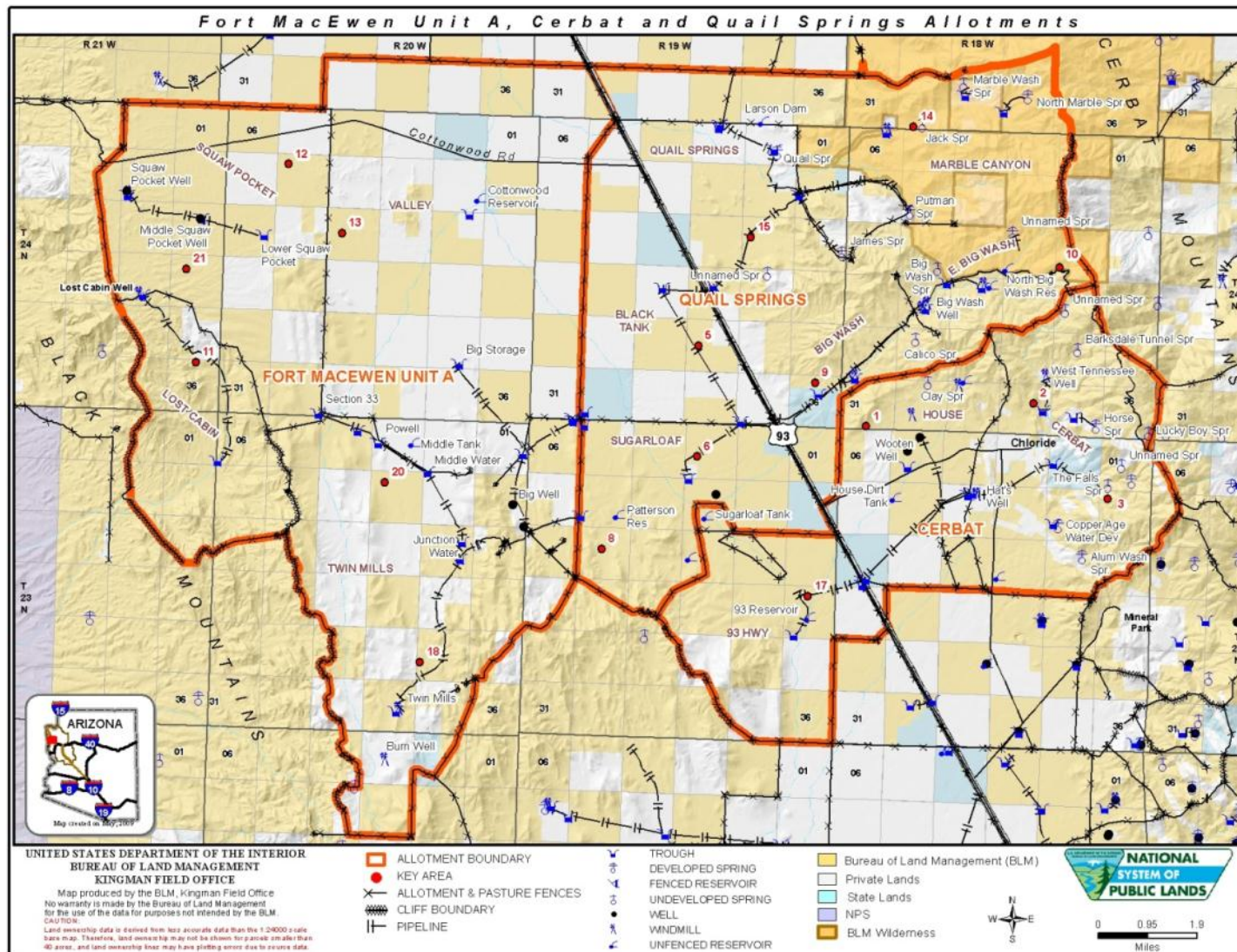


Figure 3. Existing Range Improvements

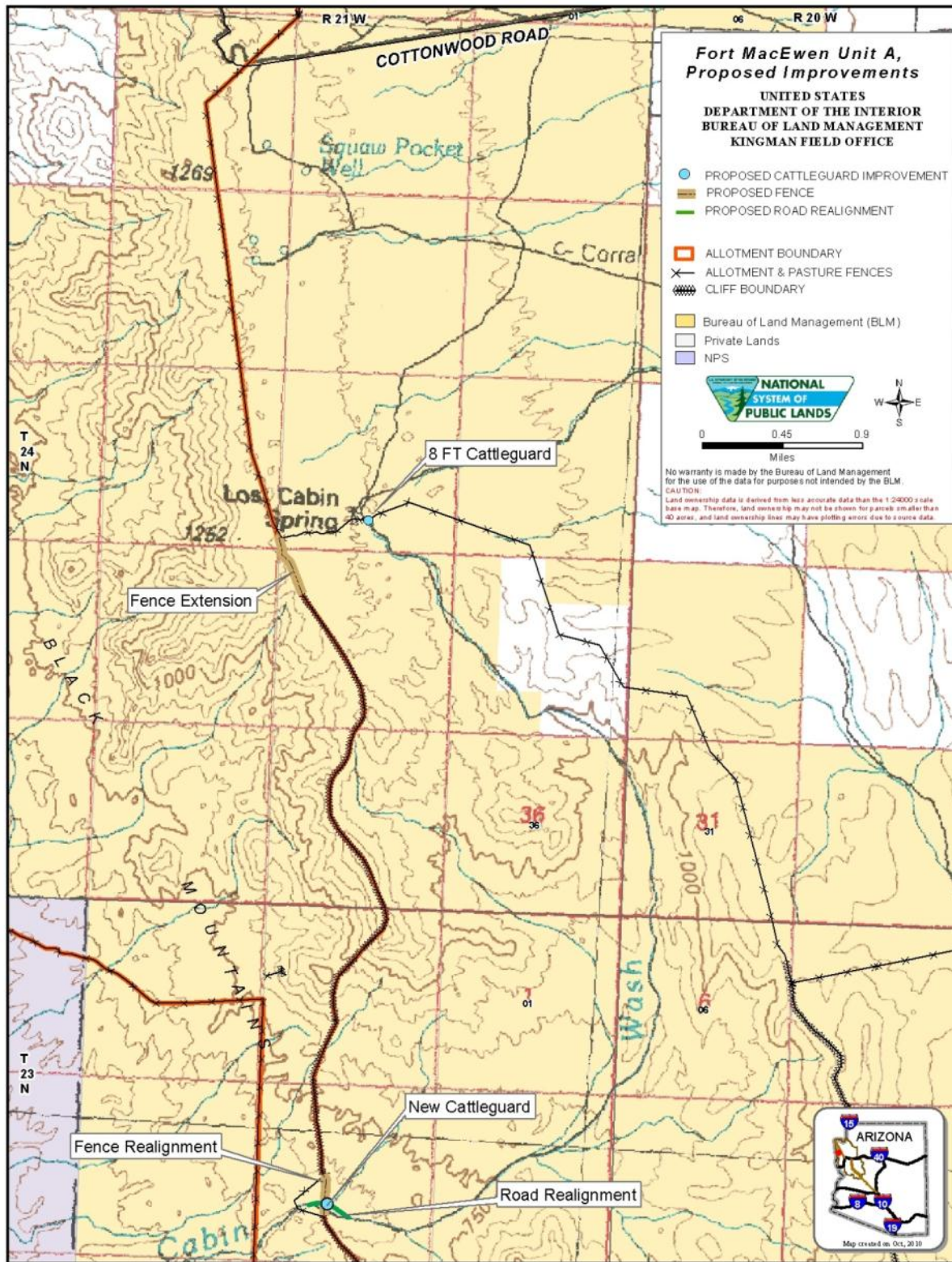


Figure 4. Fort MacEwen Allotment Proposed Improvements

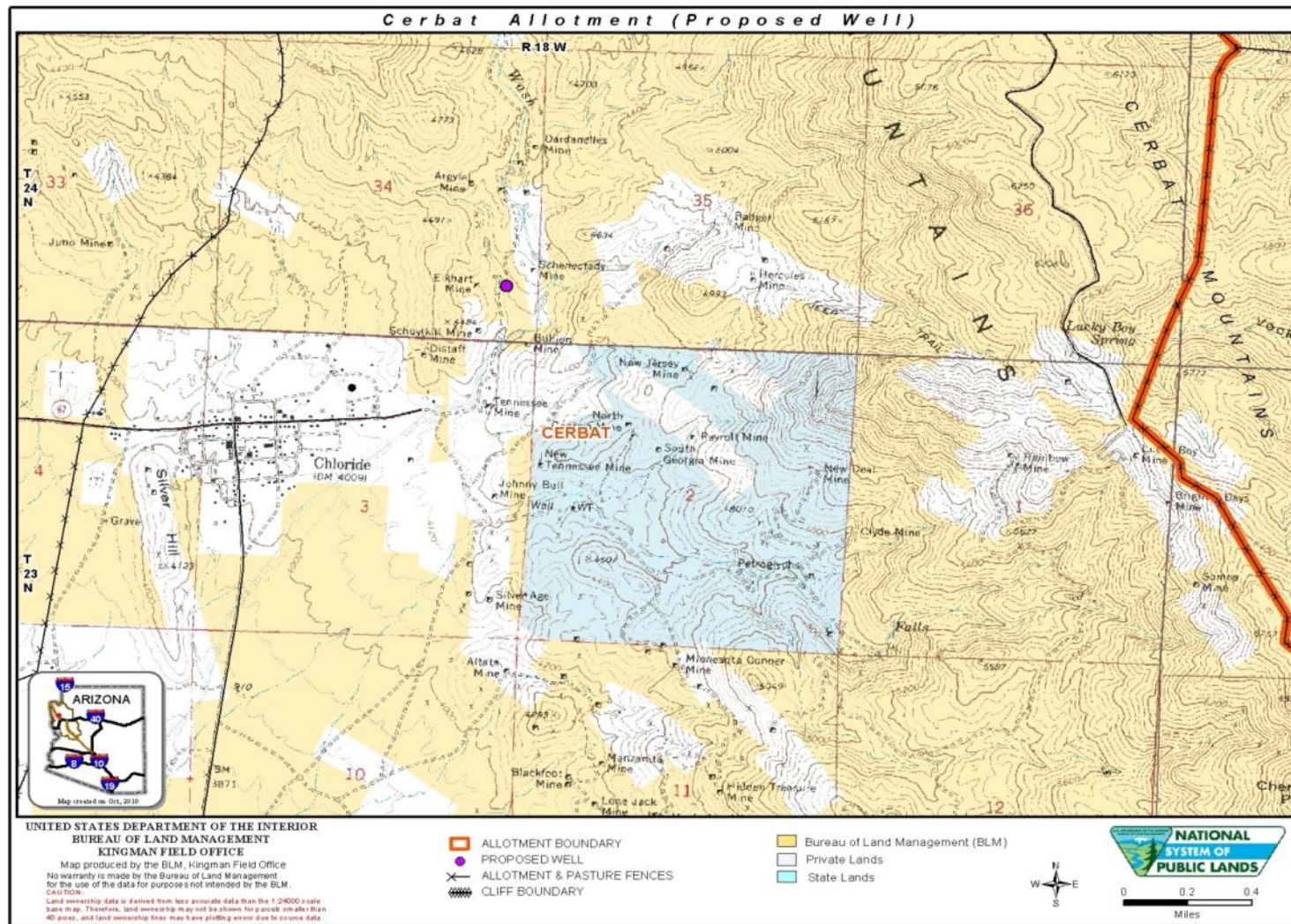


Figure 5. Proposed well in the Cerbat Pasture of the Cerbat Allotment

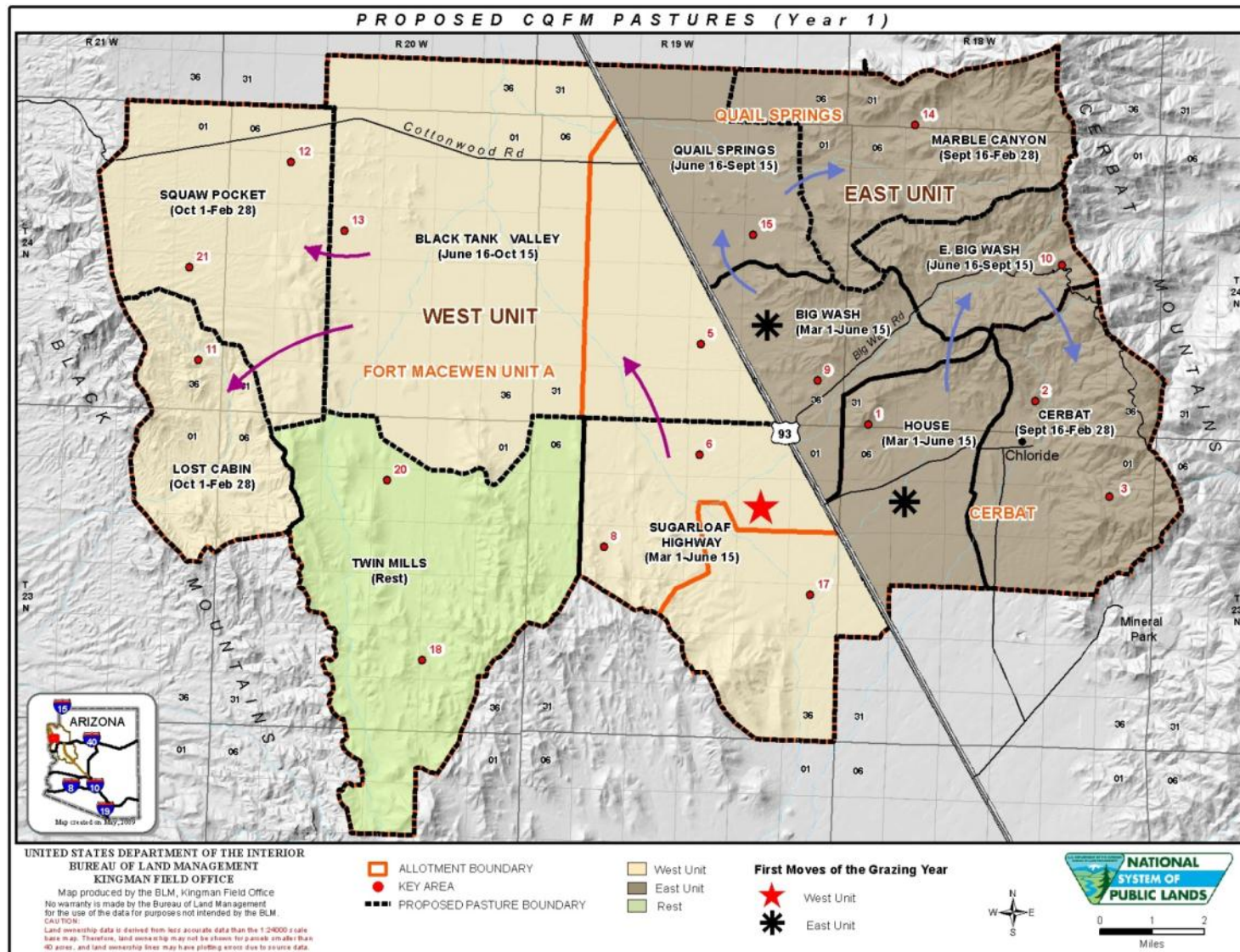


Figure 6. First Year of Proposed Pasture Rotation

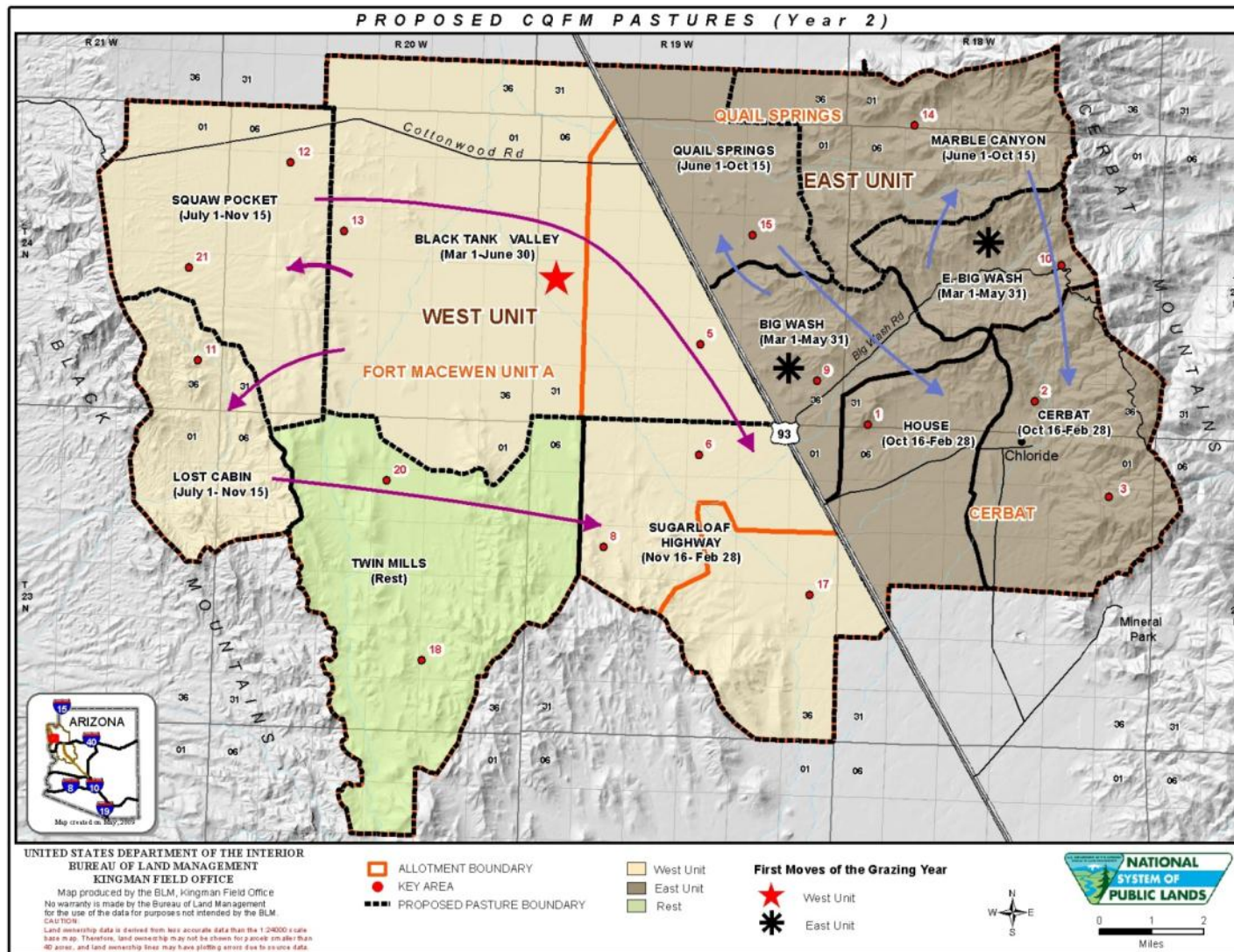


Figure 7. Second Year of Proposed Pasture Rotation

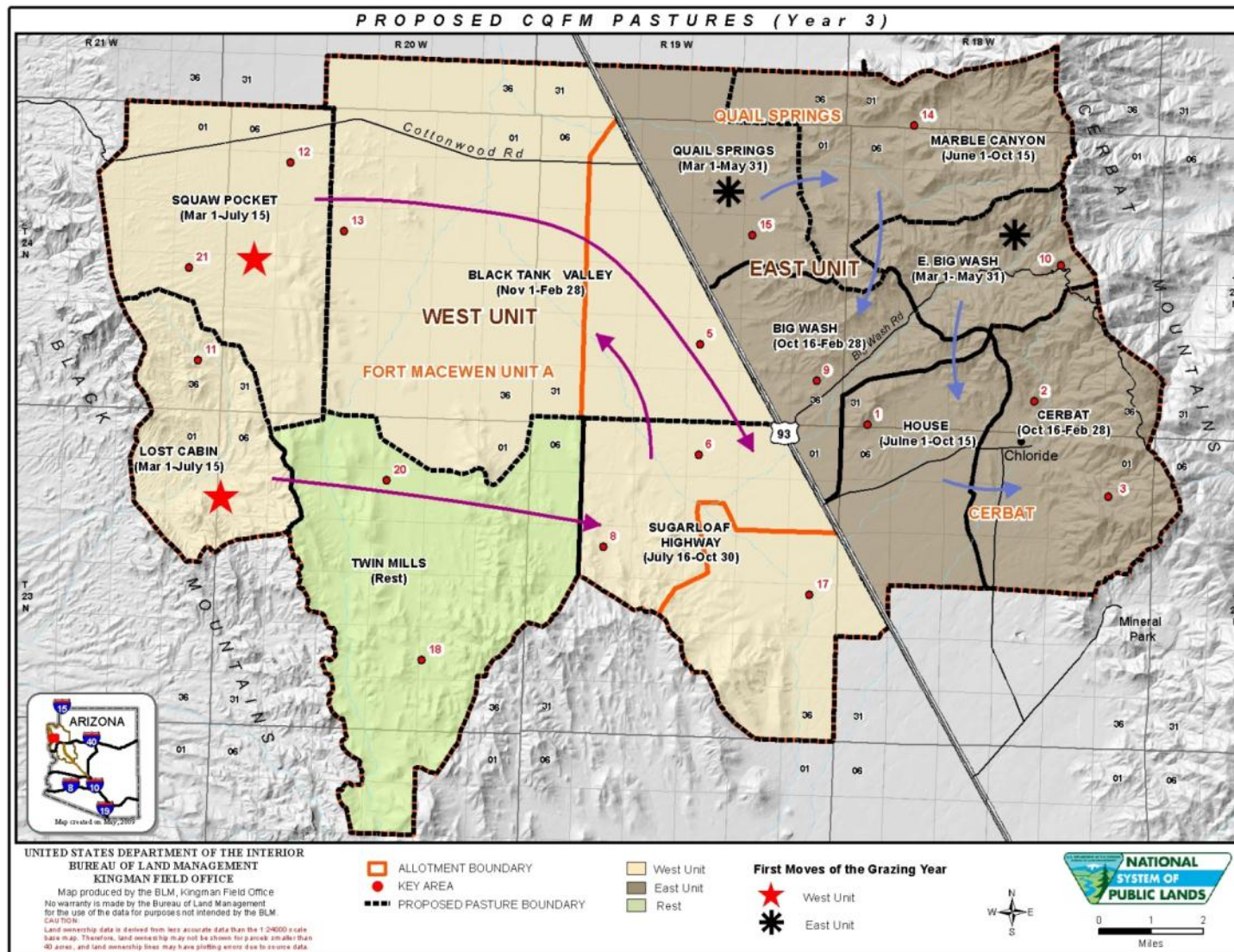


Figure 8. Third Year of Proposed Pasture Rotation

2.2 Alternative 2 No Action –1980 Allotment Management Plan

An Allotment Management Plan (AMP) (Appendix C) was approved in 1980 which stated the permittee would implement a Best Pasture Grazing System from the Jornada Experimental Range Report No. 1 (Harbel and Nelson 1969) for CQFM. According to the system, BLM and the permittee were to meet two times per year to decide which pastures should be rested during the year. The grazing system was not followed in accordance with the terms and conditions of the permit.

Under Alternative 2 current grazing management would implement the 1980 AMP Terms and Conditions of the AMP applied with the preference shown in Table 6. The rancher currently operates a cow/calf business on these allotments.

Table 6. Alternative 2, No Action Grazing Preference and Current Use

Allotment	Percent Public Land	Number and Kind of Livestock	Season of Use	Active AUMs	Suspended AUMs	Total AUMs
Cerbat	93	175 Cattle	03/01-02/28	1,953	0	1,953
Quail Springs	90	242 Cattle	03/01-02/28	2,614	0	2,614
Fort MacEwen (Unit A)	92	161 Cattle	03/01-02/28	1,777	745	2,522
Totals	578 Cattle			6,344	745	7,089

2.2.1 Grazing System

Table 7. Alternative 2 No Action pastures in the West and East Management Units

West Management Unit	East Management Unit
Fort MacEwen Allotment (Unit A) Pastures: Valley (aka Cottonwood) Twin Mills Squaw Pocket Lost Cabin	Quail Springs Allotment Pastures: Big Wash East Big Wash Quail Spring Marble Canyon
Quail Springs Allotment Pastures: Black Tank Sugarloaf	Cerbat Allotment Pastures: House Cerbat
Cerbat Allotment Pasture: Highway 93	

2.2.1.1 West Unit

The current grazing system in the West Unit consists of the following components. In mid-April, cattle are gathered from these pastures and moved into the shipping corrals located in the southeast corner of the Big Ranch Allotment. The cattle are separated into cattle to ship and cattle to keep. The cattle that are kept are released back to the Valley, Black Tank, Sugarloaf, and Highway 93 pastures where they grazed until mid-October.

Cattle are prevented from moving back and forth between the lower and upper portions of the West Unit by distance between waters and internal pasture fences. When livestock are moved into an area they are placed at the water source. When livestock are removed from a pasture, those waters on public land remain available to wildlife and burros. The distance between waters is approximately 5 to 8 miles and in

the hotter months most of the cattle remain near where they are originally placed. During the cooler months cattle may go back and forth between the lower and upper portions of the West Unit.

Portions of some of the internal pasture fences act as barriers to cattle movement however some of these fences are in disrepair. In the West Management Unit, large sections of pasture fence have been cut or removed completely in some of the pastures that contain a large amount of private land such as the Valley and Black Tank pastures. Even in pastures where the fencing has not been cut, keeping gates shut is difficult due to the high volume of traffic. This is also true for some of the gates along boundary fences.

2.2.1.2 East Unit

The current grazing system in the East Unit consists of the following components. In early May, cattle are gathered and moved into the shipping corrals located at the headquarters on the Quail Springs Allotment. The cattle are separated into cattle to ship and cattle to keep. The cattle that are kept are moved to the Big Wash, Quail Springs, and House pastures. During the cooler months cattle may go back and forth between the lower and upper portions of the East Unit.

In the East Management Unit, pasture and boundary fencing are in better condition; however, keeping gates closed is still a problem. The permittee can use water to control where the livestock graze by closing off water in corrals. In the Quail Springs Allotment the permittee is using water and fencing to control livestock. In the House Pasture (Cerbat Allotment) there is only one permanent water development and one reservoir that intermittently collects water.

In the Cerbat Pasture (Cerbat Allotment) all waters are in the form of low producing or seasonal springs. Because of this the Cerbat Pasture can only be used during the fall and winter grazing periods. All waters are open to wildlife and wild horses year-round.

2.3 Alternative 3 (No Grazing Alternative)

Under this alternative, the permits would be cancelled and livestock grazing would not be authorized for the CQFM Allotments. A process would be initiated in accordance with the 43 CFR 4100 regulations to suspend grazing for a length of time or eliminate grazing and make the allotment unavailable for grazing. The BLM could amend the Kingman RMP (BLM 1995) in accordance with 43 CFR parts 4100 and 1600 to eliminate grazing on these allotments. In accordance with 43 CFR 4110.3-3, permitted grazing use of the allotment would terminate.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

The CQFM Rangeland Health Assessment (BLM 2010) recommended several grazing management scenarios. One of the scenarios was carried forward into the proposed action and three other scenarios were not carried forward because they were substantially similar to the proposed action in scope and intensity.

3 AFFECTED ENVIRONMENT

This chapter describes the general project setting and addresses standard critical elements of the human environment (H-1790-1, Appendix 5 of the BLM NEPA Handbook, as amended) and several other resources elements commonly affected by livestock grazing. A detailed discussion of the resources present in the action area can be found in the *Cerbat, Quail Springs & Fort MacEwen Allotments Rangeland Health Evaluation* (BLM 2010).

3.1 General Project Setting

3.1.1 Landscape Setting

CQFM is 20 miles northwest of Kingman, Arizona (Figure 1). The three allotments cover an area of land ranging from the ridgeline and west side of the Cerbat Mountain Range to the ridgeline and east side of the Black Mountain Range. The landscape includes the fan terraces, drainages and low hills in Detrital Valley that lie between the two mountain ranges. The major land resource area is the Mohave Desert. Dominant aspect plants include creosote bush, white bursage, Joshua tree and Mohave yucca.

The main drainage in the Cerbat Allotment is Sacramento Wash which originates in the Cerbat Mountains and flows south into Sacramento Valley and ultimately to the Colorado River. Big Wash flows westward from the Cerbat Mountains into the uppermost reaches of Detrital Wash at the head of Detrital Valley. Detrital wash flows north through Detrital Valley and ultimately reaches Lake Mead.

3.1.2 Climate

The climate of the Mohave Desert region is generally warm, windy and dry with extreme highs near 120 degrees F and extreme lows near 25 degrees Fahrenheit. Precipitation ranges from 3 inches on the valley floor to 12 inches on the higher peaks in the Black Mountains and 16 inches in the Cerbat Mountains. The climate is influenced by both winter Pacific frontal storms and summer orographic convective storms. Approximately 65 percent of the annual precipitation falls during the cooler months of October through April with approximately 35 percent of the annual precipitation falling during the months of May through September. This bi-modal rainfall pattern results in two distinct growing seasons which occur in the spring and summer.

From 1992 through 2008 warm season drought occurred in eleven out of seventeen years and cool season drought occurred in nine out of seventeen years. Warm-season drought condition occurred several years in a row starting in 1993-1996, 2001-2003, and 2007-2008. In the 1980s, seasonal droughts also occurred but were less, frequent four out of eleven years. The duration of drought was shorter as well, usually lasting only one or two years in a row.

A thorough evaluation of climatic conditions recorded for the three allotments can be found in the *Cerbat, Quail Springs & Fort MacEwen Allotments Rangeland Health Evaluation* (BLM 2010).

3.2 Resources

Elements that are not present and will not be further analyzed include: Paleontological Resources, Prime and Unique Farmlands, Fish Habitat, Native American Religious Concerns, Noise, Public Health and Safety, Wastes (Hazardous or Solid), and Wild and Scenic Rivers.

Elements present but not affected are included in this chapter along with a short rationale why they were not analyzed in Chapter 4, Environmental Consequences. These resources are: Air Quality, Climate Change, Cultural Resources, Environmental Justice, Floodplains, Minerals, Visual Resources, and Wilderness.

Air Quality: The Federal Clean Air Act of 1970 required the Environmental Protection Agency to establish National Ambient Air Quality Standards, which specify maximum levels for six criteria pollutants; carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM) (up to 10 and up to 2.5 micrometers in size), sulfur dioxide, and lead.

Mohave County is classified by EPA as an “attainment area” for PM-10 authorized under the Clean Air Act Amendments of 1977 and 1990. Livestock operations release fugitive dust and carbon monoxide associated with cattle trailing, vehicle use and range improvement projects. The current livestock operation is in conformance with the air quality standards because it lies within the Mohave County PM-10 attainment area. Therefore all alternatives would be in conformance. The proposed action and the no grazing alternative would potentially reduce particulate matter even further because perennial plant cover is expected to increase.

Climate Change: BLM must take action to protect the environment in order to respond to the changing climate in accordance with 523 DM 1. The U.S. Geological Survey has reviewed the latest science on greenhouse gas emissions and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration (storage) and designate it as the cause of specific climate impacts at a specific location (May 14, 2008 Memorandum to the U.S. Fish and Wildlife Service). BLM nevertheless recognizes that climate change may result in impacts to plants and animals. According to EPA website: <http://www.epa.gov/ruminant.html/faq.html>, an adult cow emits 80-110 kgs of methane per year. EPA estimates that there are 100 million cattle in the U.S. that emit about 5.5 million metric tons of methane per year, which is about 20 percent of U.S. methane emissions. The number of cattle currently permitted for the CQFM allotments is 578 cows which represents 0.000084 percent of methane production by cows in the United States. (Table 8).

Table 8. Contribution of Methane Emissions by Alternative

Alternative	Number of Cattle	Estimated kg Methane/Yr/Cow	Methane Production on CQFM per year.	Percentage Contribution to U.S. Emissions metric tons
Proposed Action	203	80-110 kg/yr	16,240-22,330kg/yr	0.00032-0.00045 metric tons
No Action	578	80-110 kg/yr	46,640 kg – 64,130 kg/yr	0.00084 – 0.00116 metric tons
No Grazing	0	0 kgs/yr	0 kg/yr	0.0 metric tons

Cultural Resources: There are numerous cultural sites scattered at low to moderate density across these allotments. They consist of: prehistoric artifact scatters of ceramic and stone tool debitage, and rock art sites; historic sites related to mining; and remnants of historic Hualapai Indian home sites. The home sites no longer have standing architecture and no perennial water. The mining sites have sparse vegetation and no perennial water.

According to Arizona BLM Handbook H-8110, Guidelines for Identifying Cultural Resources (BLM 1999), livestock grazing actions, such as permit renewals are generally exempt from cultural resources surveys, and range improvements are land disturbing activities that require site-specific survey. BLM conducted Class III cultural resource surveys at all proposed range improvement locations and enclosure, no cultural resources were found at any of the locations (BLM Archaeologist Tim Watkins, personal communication). Since the 1970s, Kingman archaeologists conducted a minimum of Class II surveys in existing grazing allotments focused on areas where cattle congregate, loafing areas and on cattle trails. Historic structures eligible to the National Register are fenced. It was determined that no impact would

occur to cultural resources as a result of proposed range improvements or to existing sites within the allotments. A Class III cultural resources survey was conducted on March 25, 2013 and Cultural Resources Project Record BLM-AZ-310-13-08 is on file documenting the survey results.

Environmental Justice: No environmental justice effects were identified or expected to happen if any of the alternatives were to be implemented. Continued livestock grazing under any of the action alternatives would have no disproportionately high or adverse human health or other environmental effects on minority or low income segments of the population.

Floodplains: No actions are proposed that result in permanent fills, diversions, or placement of permanent facilities in floodplains or special flood hazard areas. Continued livestock grazing would not affect the function of the floodplains.

Minerals: Continuing livestock grazing would not alter geological features or mineral resources.

Visual Resources: The allotments contain areas designated as Visual Resource Management Classes II, III, and IV. Continuing livestock grazing as proposed would not affect visual resources; new range improvements proposed would not change the existing character of the landscape and would meet the VRM objectives.

Wilderness: Approximately 8,180 acres of the Mount Tipton Wilderness, designated by Congress in November 1990, is located in the eastern portion of the Quail Springs Allotment. This area was selected for its high degree of naturalness. Livestock grazing is an existing use within the Wilderness. The Mount Tipton Wilderness Management Plan (BLM 1995a) allows non-motorized and non-mechanized inspection and routine maintenance of range improvements such as fences and water developments at springs. The existing Wilderness values of naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation would be retained under any of the alternatives.

The following sections contain descriptions of elements determined to be present and potentially affected by the alternatives and carried forward for detailed analysis in this document. The description of the resources identified below provides the baseline for comparison of impacts described in Chapter 4.

Elements potentially affected by the proposed action and alternatives described in this chapter:

- Areas of Critical Environmental Concern (ACEC),
- Fuels/Fire Management,
- Invasive Non-native Species,
- Lands and Realty,
- Livestock Grazing Management,
- Recreation,
- Riparian,
- Socioeconomics,
- Soils,
- Vegetation,
- Wild Horses and Burros,
- Wildlife, including Special Status Species and Migratory Birds,
- Water Quality (drinking or ground-water).

3.2.1 Area of Critical Environmental Concern

Part of the Black Mountains Ecosystem Management Area of Critical Environmental Concern, a block of 10,348 acres (Figure 9), occurs within the Fort MacEwen Allotment. The ACEC was established in the Kingman RMP (BLM 1996) to manage the diverse resources within its boundaries by balancing

competing uses. The resources identified were: desert bighorn sheep, wild burro and habitat for the two-colored beard tongue habitat, outstanding scenic values; open space near major population centers; rare and outstanding cultural resources; mineral deposits; and livestock grazing. The direction for range and watershed management within the RMP is to manage livestock and burro grazing to achieve objectives for bighorn sheep, wild burro, deer and two-colored beard tongue desired plant community description; and classify allotments within 9 miles of bighorn sheep habitat for grazing by livestock as cattle only. Livestock grazing is an existing use within the ACEC.

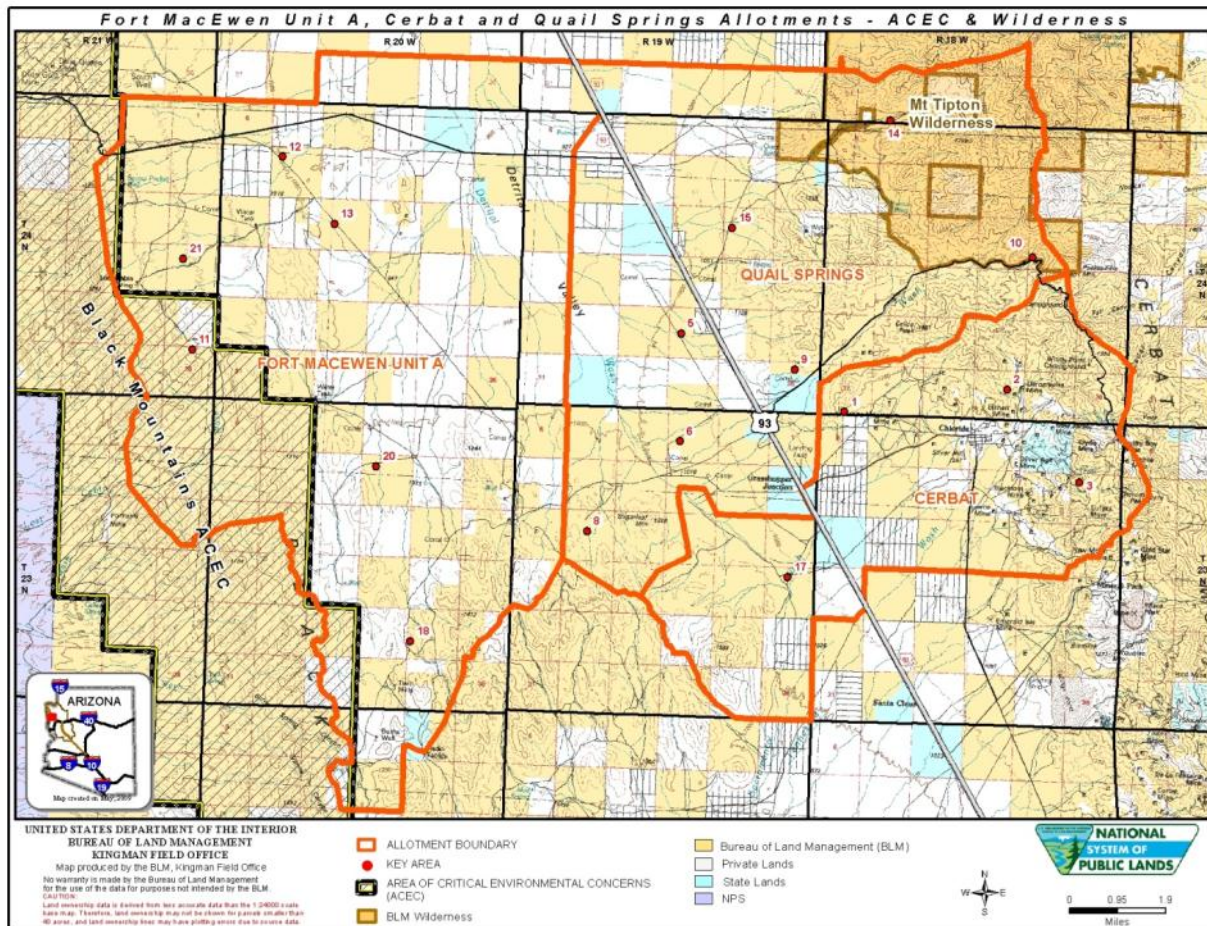


Figure 9 Location of Black Mountain Area of Critical Environmental Concern in Relation to the Allotments

3.2.2 Fuels/Fire Management

The CQFM allotments are located in the Mohave Desert where desert scrub is the dominant plant community. Desert scrub vegetation types are not fire-adapted and native species do not readily recover from the effects of wildfire. Fire is carried by exotic annual grasses which have invaded into the landscape. Exotic annual grasses such as red brome become fire hazards after wet winters. The grasses typically cure by mid-May, when the fire season typically begins.

The vegetation within the Fort MacEwen allotment in the Twin Mills and Valley Pastures were burned by wildfire in July, 2005 during the Twin Mills Fire which burned 11,927 acres. Another fire called the Union Fire burned in June, 2006 covering 8,380 acres (Figure 10). In the 1980s and 1990s, several other smaller scale fires occurred in the Fort MacEwen and Quail Springs allotments. Red brome was the

primary fuel which carried these fires and other annual grasses and forbs contributed as well. No hazardous fuel reduction or fuels management projects are proposed for these allotments.

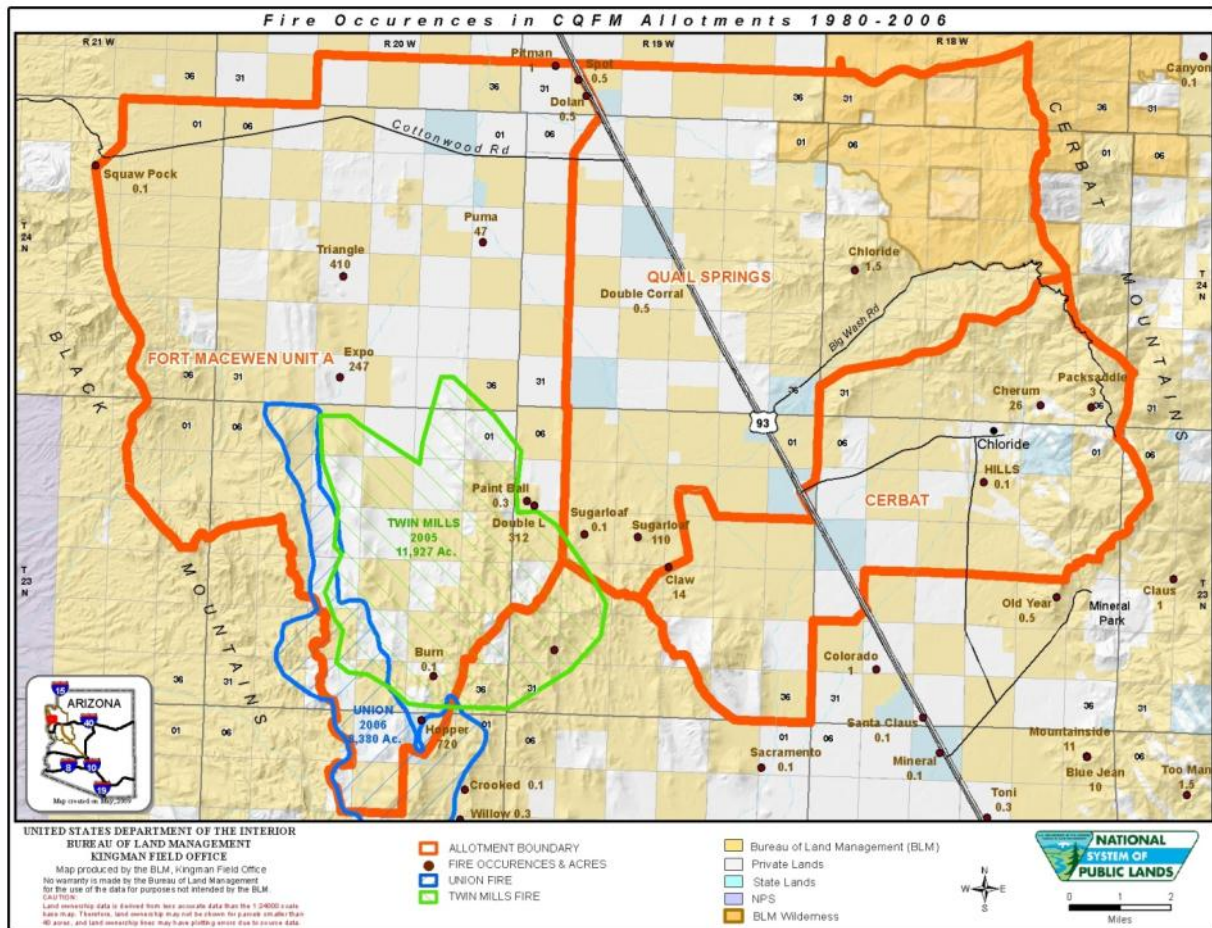


Figure 10. Wildfire Occurrence in the CQFM Allotments

3.2.3 Invasive Non-native Species

A number of invasive non-native species are present in the allotments some of which have been in Arizona for more than 50 years and are common throughout the state and Mohave County. Field going personnel at BLM and a recent invasive species survey documented along U.S. Highway 93 (ADOT 2009) indicate the most common invasive species are cheatgrass, red brome grass, Sahara mustard, puncture vine, Malta starthistle, and Mediterranean grass.

The presence of cheatgrass and red brome across these allotments is variable depending upon the amount and seasonal distribution of rainfall. In years with favorable precipitation, these grasses are widespread across the desert floor. In low rainfall years they are restricted to the base of desert shrubs. Cheatgrass and red brome are not listed on the Arizona Noxious Weed List, but both are considered very invasive non-native grass species (Arizona Wildlands Invasive Plant Working Group 2005). They are grazed by cattle when the plants are immature, prior to producing seed and curing out.

Sahara mustard and Malta starthistle are spreading northward along the highway corridor and are found primarily along the U.S. Highway 93 roadside. Puncturevine is found primarily in the residential areas dispersed throughout the allotments within the valleys. The seed is spread by vehicle tires and it

germinates in disturbed areas such as parking lots and along roadsides. Mediterranean grass is widespread throughout the desert southwest.

3.2.4 Livestock Grazing Management

A grazing permit is issued for livestock forage produced on the public lands and is allotted on an AUM basis. Livestock are to be grazed on public lands in accordance with the terms and conditions of the BLM issued grazing permit including numbers, established season of use, etc. The livestock operator assumes grazing management responsibility with the intent to maintain or improve existing resources. The BLM retains the right to manage the public lands for multiple uses and to make periodic inspections to ensure that inappropriate grazing does not occur.

The BLM does not control private lands within the allotments. The permit holder may own or lease private lands for grazing. If private land is used during different periods, it is the permittee's responsibility to keep livestock off the public land during non-grazing periods.

Acreage of land ownership within each allotment is shown in Table 9. Active grazing use on the Cerbat Allotment is 1,953 AUMs; active grazing use on the Quail Springs Allotment is 2,614 AUMs; active grazing use on the Fort MacEwen Allotment is 1,796 AUMs. There are also 726 which were suspended AUMs on this allotment for administrative reasons. An AUM means the amount of forage necessary for the subsistence of one cow or its equivalent for a period of one month (43 CFR 4100.1-5).

Table 9. Land Ownership by Allotment

Ownership	Cerbat	Quail Springs	Fort MacEwen	Total
Federal	18,602 acres	32,538 acres	34,982 acres	86,122
State	1,262 acres	2,573 acres	896 acres	4,731
Private	5,979 acres	9,317 acres	25,553 acres	40,849
Total	25,843 acres	44,428 acres	61,431 acres	131,702

The CQFM allotments are categorized as perennial ephemeral “improve” (I) allotments. This category identifies allotments with management and resource concerns; and these allotments are managed more intensively and monitored more frequently. They are the highest priority for monitoring and investment in improvements. As a result of their categorization as improve allotments, all three have AMPs in place. The Cerbat, Quail Springs and Fort MacEwen AMP was approved September 30, 1980. The three allotments are grazed together as two units – one east of US-93 and one west of the highway.

Every year some of the pastures are lightly stocked to reduce grazing pressure. The actual/licensed use is shown in Table 10 but it does not reflect the light stocking rate by pastures because actual use was given by allotment, not pasture. All AUMs shown before 2001 are based upon licensed use. Actual use reporting did not start until 2001 and actual use was reported by allotment not by pasture. Actual use of the permitted AUMs on the Cerbat Allotment has varied from 7 to 100 percent between 1998 and 2008. Actual use within the Quail Springs Allotment has varied from 0 to 92 percent between 1998 and 2008. Actual use within the Fort MacEwen Allotment has varied from 0 to greater than 100 percent, due to additional cattle being placed on ephemeral forage.

Table 10. Actual Use from 1998 to 2010 for the CQFM Allotments

Year	Cerbat AUMs	Quail Springs AUMs	Fort MacEwen AUMs
1998	1953	2397	1437
1999	518	1757	2489 (of this 712 AUMs are Eph)*
2000	1150	632	3729 (of this 1952 AUMs are Eph*)
2001	679	367	626
2002	132	0**	0**
2003	371	522	828
2004	211	340	667
2005	335	162	1242
2006	391	297	759
2007	391	1782	3588 (of this 1811 AUMs are Eph*)
2008	502	1836	1766
2009	338	991	1766
2010	670	2106	1769

*(+Eph) Means additional cattle were turned out based upon additional ephemeral forage.

**Non-use reflects seasonally dry periods, drought years or other factors.

3.2.5 Lands and Realty

Land ownership within the CQFM Allotments is a mixture of Federal, State and private land. Of the private land, some is controlled by the permittee and other parcels are not under control of the permittee. The pattern of land ownership is shown in Table 9 above and in Figure 1. Some of the private parcels are fenced from cattle grazing. Fencing is listed in the 1980 AMP for proposed and existing range improvements. Change to the fencing design is warranted to accommodate population growth exhibited by new housing developments and changing demographics of land ownership within the allotment.

3.2.6 Recreation

Two developed campgrounds – Windy Point and Packsaddle – and the Cherum Peak Trail are located within the allotments. The remainder of the area in the allotments, excluding wilderness, is open to dispersed recreation uses and to OHV use on existing roads, trails and navigable washes. Livestock grazing and recreation are both existing uses that fit within the multiple use mandate of FLPMA.

3.2.7 Riparian

There are 22 riparian zones located on public and private lands associated with springs which were evaluated by BLM for proper functioning condition to determine if Land Health Standard 2 was being met (BLM 2010). Springs have the potential to develop and maintain riparian vegetation. Of the 22 springs, 13 were classified as perennial, 8 are ephemeral, and 1 spring is no longer active. There are no lotic (flowing) riparian wetland areas within these allotments.



Figure 11. Barksdale Spring is in the Cerbat Allotment, Standard 2 is Met

Table 11 shows the nine perennial springs located on public land for which BLM has jurisdiction. Standard 2 was met at Barksdale Spring, Lucky Boy Spring, the Falls Springs-Upper, and James Spring. Standard 2 was not met at the Falls Springs-Lower, Swicker Spring, and Big Wash Spring. BLM has no jurisdiction over the 13 springs located on private land.

Table 11. List of Perennial Springs on Public Land and Whether Standard 2 Was Met or Not Met

Standard 2 – Riparian and Wetland Sites			
Spring Name	Met	Not Met	N/A
Barksdale Spring	X		
Lucky Boy Spring	X		
Upper Falls Spring	X		
Lower Falls Spring		X	
Swicker Spring		X	
Big Wash Spring		X	
James Spring	X		
Copper Age Spring*			X
Lost Cabin Spring*			X

*Copper Age Spring There is no riparian development potential. This spring is located within a mine adit that has caved in. The water if present is in the mine and accessible only to small animals that can crawl into the caved in area.

*Lost Cabin Spring: This spring no longer active on the surface or in the subsurface and is not considered perennial or ephemeral.



Figure 12. Lucky Boy Spring in the Cerbat Allotment, Standard 2 is Met

Standard 2, Riparian-Wetland Sites does not apply to the six ephemeral springs that were inventoried on public land nor is this standard applicable to Lost Cabin Spring and Copper Age Spring. These springs either are dry or intermittently produce such a small amount of water that they have no potential to support riparian vegetation.

3.2.8 Socioeconomics

The permittee operates a cow calf operation permitted for 578 AUs per year. Depending on the condition and number of cattle for any given year the permittee reports a 70 percent calf crop.

In a letter to BLM, Mohave County Livestock Association (April 15, 2010) suggested the CQFM allotments add \$418,700 dollars annually to the local economy which equates to \$418,700,000.00 per 10 years.

The permittee pays grazing fees of which 12.5 percent are returned to the Mohave County grazing board each year in accordance with the Taylor Grazing Act. Another 50 percent of these fees are returned to BLM for the construction and maintenance of range improvements in accordance with the Federal Land Management and Policy Act. Depending on the price of the AUMs and the number of AUMs utilized for that year Mohave County grazing board on average receives \$30,000 each year for all ranches combined including the Arizona Strip. BLM receives approximately \$70-80,000 each year for range improvements. Over the last seven years the permittee averaged \$4,900 in grazing fees annually. This means \$588 would go to the grazing board and \$2,450 would come back to BLM for range improvements.

In the management of the grazing permit, the permittee hires approximately three year round employees to manage livestock waters and administer the business. He may employ additional labor which typically consists of one or more individuals on a seasonal basis.

The sale of calves at stockyard by the permittee benefits the financial needs of the permittee and provides capital to purchase goods and services for continuation of the grazing operation and personal needs.

3.2.9 Soils

The soils and ecological sites on the CQFM Allotments have been mapped, correlated, and approved to National Cooperative Soil Survey Order III soil survey standards (Soil Survey Manual, Soil Taxonomy, National Survey Handbook). This information is published in the Soil Survey of Mohave County, Arizona, Central Part 2005 by the Natural Resource Conservation Service (NRCS). More in depth soil information for these allotments can be found on the NRCS website in the soil survey report of Mohave County Arizona Central Part, 2005. Corresponding details on ecological site information, correlated to soil map unit information, is also found on the NRCS website.

To determine the functional status of the three rangeland health attributes (soil/site stability, hydrologic function, and biotic integrity) the ID Team reviews the ratings of the 17 indicators on site by site basis and makes the interpretation into a collective rating. Based on the rating, it is determined if more information is needed or if the site requires management action (Pellant et al. 2005). The Rangeland Health Evaluation (BLM 2010) found that Standard 1, Upland Health, was met at all Key Areas. The upland soils were found to exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site). Assessment results from all key areas indicate a “none to slight” departure from the attributes measured. The ID Team evaluated the ratings of the 17 indicators on a site by site basis and made a collective rating of none to slight which is the least departure from normal.

The open space between higher plants is not generally bare of life. Highly specialized organisms can make up a surface community that may include cyanobacteria, green algae, lichens, mosses, microfungi and other bacteria. Soils with these organisms are often referred to as cryptogamic soils and create what is referred to as biological crusts.

In general, cyanobacteria and microfungal filaments weave through the top few millimeters of soil and aid in holding loose particles together forming a biological crust which stabilizes and protects soil surfaces. The biological crusts aid moisture retention, “fix” nitrogen, and may discourage the annual growth of annual weeds. Below the surface, the soil flora grows various rhizomes, hyphae and filaments that further bind the soil together. No mapping of the allotments was conducted for biological crusts during the rangeland health evaluation. However, biological soil crusts are observed throughout the allotments in locations away from waters and where soils are meeting Standard 1.

3.2.10 Vegetation (Upland)

Management of the allotments is based on a selection of key species for each allotment. Appendix A lists plant species for the area. In the CQFM allotments, the more common key species are: big galleta, black grama, bush muhly, sideoats grama, Mormon tea, and twin-berry. The key plant species are listed in Appendix B and are defined as: 1) forage species of sufficient abundance and palatability to justify its use as an indicator to the degree of use of associated species; and 2) those species, because of their importance, must be considered in the management program (BLM 1996a, Smith et.al. 2005). Proper management of these key species provides for the physiological requirements of most of the other desirable species on the allotments. Appendix B is composed of tables for each key area in the allotments which depict the desired plant community (DPC) objectives for the proposed action and no action alternatives. These objectives are based on the ecological site descriptions of species composition and compared to species present at the key areas and historical data. DPC objectives are used as an indicator of ecosystem function and rangeland health.

Allotment monitoring data indicate that resource conditions on the allotments are not currently meeting all applicable standards for rangeland health because DPC objectives for vegetation components at key areas are not being met in some locations. The CQFM Rangeland Health Evaluation (BLM 2010) developed a data summary for each of the three Arizona Standards. Standard 3 evaluates whether vegetation objectives are being met. Table 12 and Figure 13 show that for 17 key areas, objectives are not

being met for six key areas. For a detailed discussion on why objectives are met or not met, refer to the conclusion section of the CQFM evaluation (BLM 2010).

Xeroriparian or desert washes occur throughout CQFM. These washes are linear, infrequently flooded sites that have surface water for only brief periods often just for a few hours in a year. The perennial plant community consists of a mix of catclaw acacia, grey thorn, mesquite, wolfberry, cheeseweed, and wooly-fruited bursage.

Table 12. Rangeland Health Data Summary*

Allotment (Pasture)	Key Area	Ecological Site	Standard 1	Standard 3	Trend**
Cerbat	1	Sandy Loam Upland 10-13" p.z.	Met	Met	Upward
Cerbat	2	Granitic Hills 10-13" p.z.	Met	Met	Static to downward
Cerbat	3	Granitic Hills 10-13" p.z.	Met	Not met, making significant progress	Static to upward
Cerbat	17	Clay Loam Upland 10-13" p.z.	Met	Met	Downward
Quail Springs	5	Clay Loam Upland 10-13" p.z.	Met	Not met	Downward
Quail Springs	6	Clay Loam Upland 10-13" p.z.	Met	Met	Static
Quail Springs (Joint Use Area)	8	Basalt Hills 10-13" p.z.	Met	Met	Static
Quail Springs	9	Sandy Loam Upland 10-13" p.z.	Met	Met	Static
Quail Springs (East Big Wash Pasture)	10	Granitic Hills 10-13" p.z.	Met	Not met	Downward
Quail Springs (Marble Canyon Pasture)	14	Granitic Hills 10-13" p.z.	Met	Not met	Static to downward
Quail Springs (Quail Springs Pasture)	15	Sandy Loam Upland 10-13" p.z.	Met	Met	Downward
Fort MacEwen Unit A (Lost Cabin Pasture, Joint Use Area)	11	Basalt Hills 6-10" p.z.	Met	Met	Static
Fort MacEwen Unit A (Squaw Pocket Pasture)	12	Sandy Loam Upland 10-13" p.z.	Met	Not met	Static to downward
Fort MacEwen Unit A (Valley Pasture)	13	Sandy Loam Upland 10-13" p.z.	Met	Met	Static
Fort MacEwen Unit A (Twin Mills Pasture, Joint Use Area)	18	Basalt Hills 10-13" p.z.	Met	Not met	Static
Fort MacEwen Unit A (Twin Mills Pasture, Joint Use Area)	20	Limy Hills 10-13" p.z.	Met	Not met	Static

Allotment (Pasture)	Key Area	Ecological Site	Standard 1	Standard 3	Trend**
Fort MacEwen Unit A (aka: Lost Cabin Spring, Squaw Pocket Pasture, Joint Use Area)	21	Sandy Loam Upland 10-13" p.z.	Met	Not met, making significant progress	Upward

* Standard 2 (Riparian-Wetland Sites) assessments are not conducted at key areas as these areas are not riparian and therefore not listed in Table 12 but listed in Table 11.

**Based on the trend noted in the Rangeland Health Evaluation.

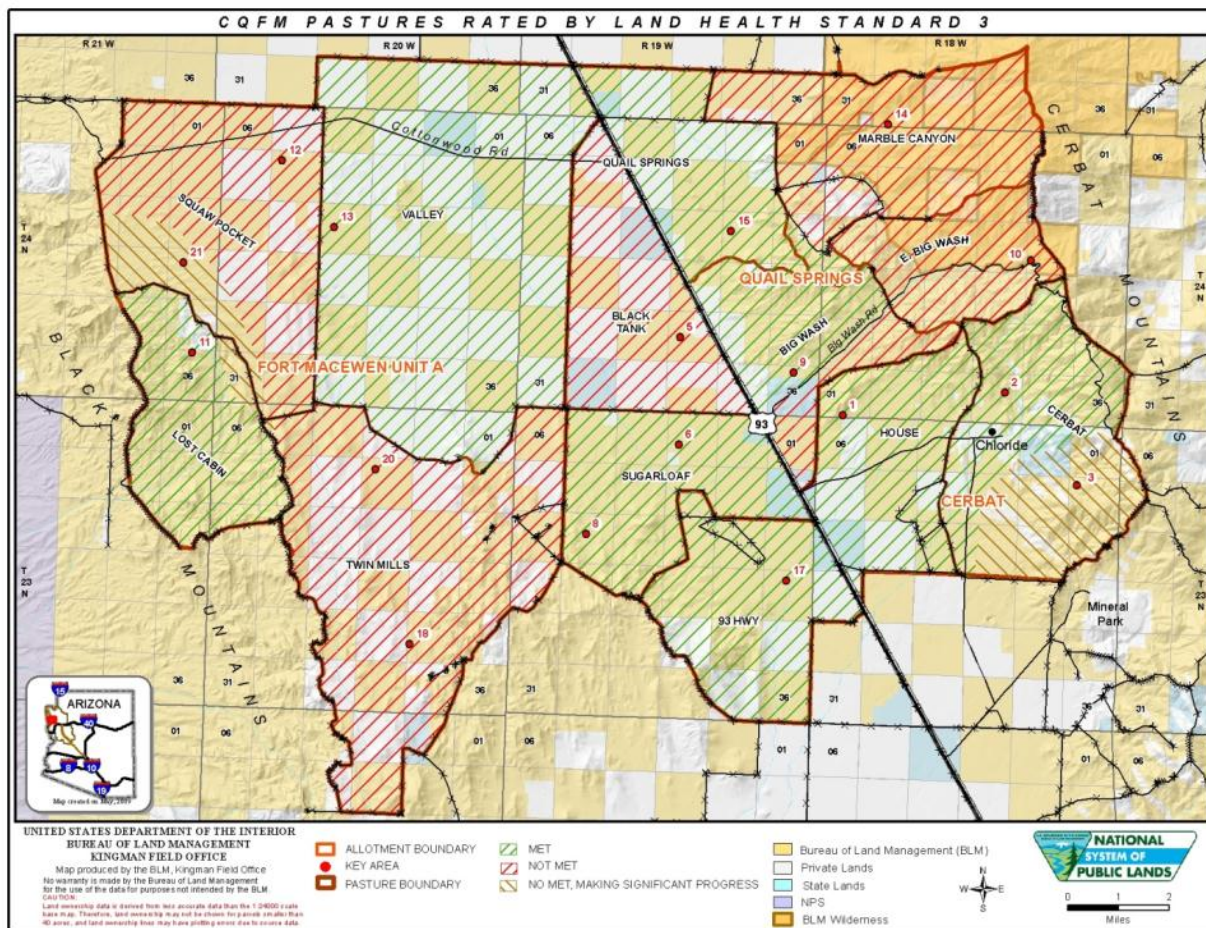


Figure 13. Map of Pastures Rated by Standard 3 at Key Areas

3.2.11 Water Quality (Drinking and Ground)

The main drainage in the Cerbat Allotment is Sacramento Wash, which originates in the Cerbat Mountains and flows south into Sacramento Valley and ultimately to the Colorado River. Big Wash flows westward from the Cerbat Mountains into the uppermost reaches of Detrital Wash at the head of Detrital Valley. Detrital Wash flows north through Detrital Valley and ultimately reaches Lake Mead. During rainfall events large enough to cause surface flooding, surface water flows through washes. Groundwater flows in the same direction as surface water in each of the two basins. U.S. Geological Survey studied the groundwater occurrence and water level changes in the Sacramento and Detrital Valleys using recorded data from 1943 through 2006 (Anning, D.W. et al. 2007). The report indicates ground-water has remained

steady or slowly increased for recorded wells within the CQFM allotment area. Conversely, ground-water has declined near the urban areas of Kingman and Golden Valley, outside of the allotment boundaries.

There is lentic (non-flowing) surface water within the allotments on public land at nine springs and no lotic (flowing) water. The amount of water produced by each spring is variable depending upon ground-water conditions such as rock substrate and position within the aquifer. BLM is not required to test water quality at the surface water springs.

3.2.12 Wild Horses and Burros

Wild horses and burros are protected, managed and controlled by the federal government under the authority of the Wild Horse and Burro Act of 1971 to ensure healthy herds thrive on healthy range lands. The BLM cares for these living symbols as part of its multiple-use mission under the 1976 Federal Land Policy and Management Act.

The Black Mountain Herd Management Area (HMA) was designated in the early 1980s and is the largest in Arizona. The HMA includes the entire range of the Black Mountains encompassing approximately 1.1 million acres of land. Portions of the Cerbat, Quail Springs and Fort MacEwen allotments west of US-93 lie within the HMA. BLM conducted an aerial population estimate for burros in the HMA in 2010 and the population estimate was approximately 407 adults and 136 juveniles. The survey analyzes the area as a whole and does not separate by allotments.

Burros are medium sized ungulates that can use a variety of terrain including flat areas as well as the steep, more rugged terrain usually associated with bighorn sheep. Typically, burros are opportunistic grazers and can efficiently use coarse, lower quality forage (BLM 1996 and Burden 2012). The estimated appropriate management level (AML) in the Black Mountain is 478 wild burros (BMEMP 1996) based on a population metric determined by an analysis of monitoring data such as grazing use, trend in range condition, actual use, and other factors. Forage is allocated to burros in AUMs. One AU which is equal to 12 AUMs is equal to two burros.

The Cerbat Herd Area (HA) is one of two HAs in Arizona. The HA is approximately 18 miles long and 12 miles wide tapering to a width of 4 miles at the northern end and encompasses approximately 83,000 acres. Portions of the Quail Springs and Cerbat allotments east of US-93 lie within the HA. A population estimate conducted in 2001 resulted in an estimate of 70 wild horses.

Horses can also use a variety of terrain and are primarily grazers, preferring grasses and forbs to browse. Like wild burros, horses also have the ability to be highly selective feeders. In areas where utilization is heavy, horses have the ability to crop the vegetation closely (Stoddart et.al. 1975). Horses compete with livestock for forage and are less limited on the passage rate of food fragments through the digestive tract compared to cattle. Currently, there is no AML set for the Cerbat HA. Information is limited on the true extent of the herd's home range, and their behavioral aspects. Population estimates have been limited with the most recent being in 2001. This survey resulted in an estimate of 70 wild horses across the entire HA. Current population levels are based on ground sightings from local residents in the area, ranchers and BLM personnel. Current population numbers for wild horses within CQFM is estimated to be 5 horses. BLM does not conduct any removals because the herd seems to self-maintain. Forage is allocated to the horses in AUMs where 1.25 AU is equal to 1 horse.

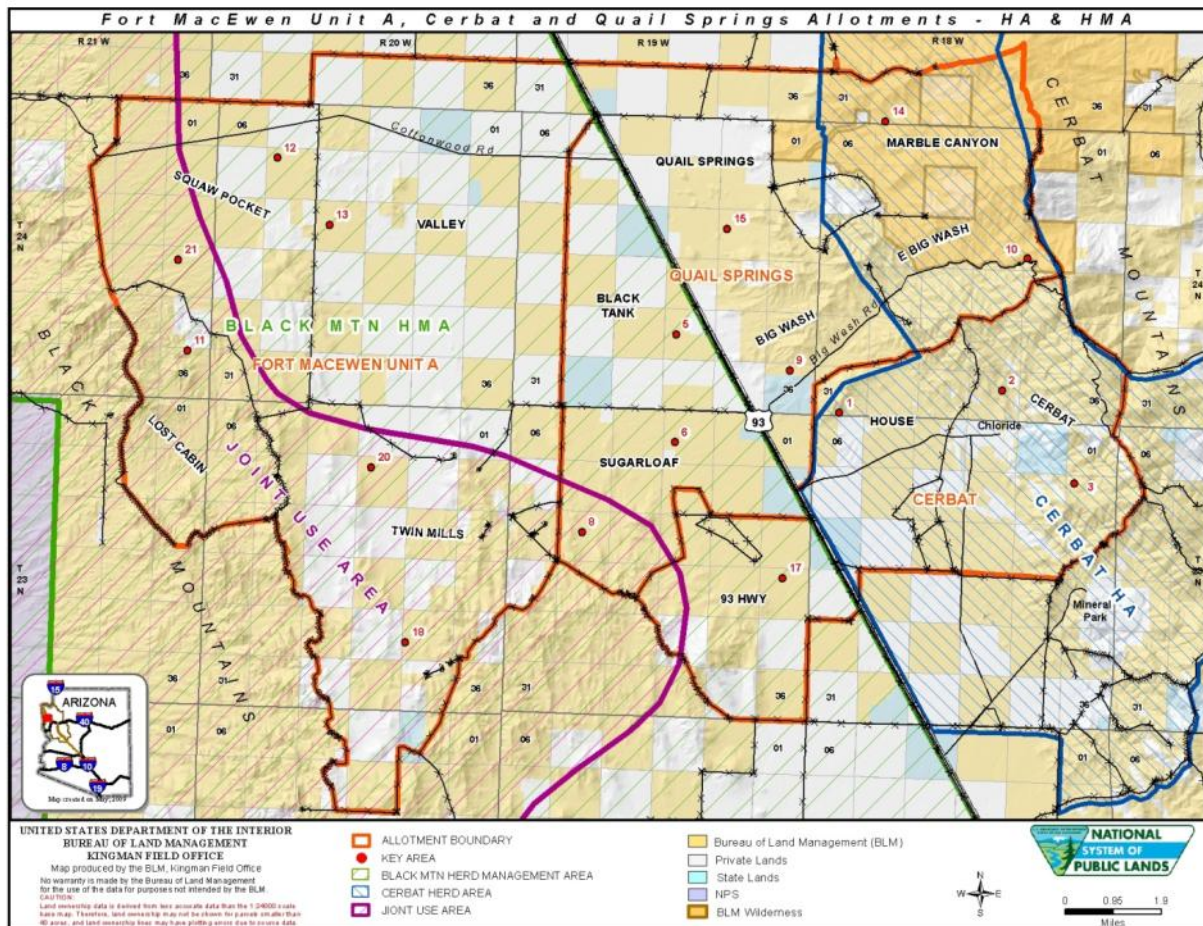


Figure 14. Cerbat Herd Area and the Black Mountain Herd Management Area

3.2.13 Wildlife including Special Status Species and Migratory Birds

Wildlife in the CQFM allotments considered in this EA includes federally listed and candidate species, state listed, BLM sensitive, migratory birds, and general wildlife species.

3.2.13.1 Federally Listed Species

In compliance with the Endangered Species Act, a biological evaluation was completed for the CQFM allotments (BLM 2010a). There is no habitat in the allotments for desert bald eagle; Mexican spotted owl; southwestern willow flycatcher; Yuma clapper rail; yellow-billed cuckoo; Hualapai Mexican vole; round-tail chub; Gila topminnow; or desert pupfish. Therefore there would be no effect to any of these species. The biological evaluation reported that CQFM is within the experimental range of the California condor however there would be no affect to this species from implementation of the proposed action (BLM 2010a). Because there was a determination of no affect for these species impacts will not be further analyzed.

3.2.13.2 Candidate, State-listed, and BLM Sensitive Species

In addition to the federally listed species there are a number of candidate, State listed, and BLM sensitive animal species that occur or may occur within the CQFM Allotments (Table 13). Information on occurrence and habitat needs for many of these species is limited as sensitive species are usually rare within at least a portion of their range.

Table 13. Special Status Species That Occur or Have Potential Habitat in the Allotments

Species	Federally Listed Species	Candidate Species	BLM Sensitive	Arizona Species of Greatest Conservation Need	Known to occur in allotments	Potential habitat in allotments
American peregrine falcon (<i>Falco peregrines</i>)			X	X	X	
Golden Eagle (<i>Aquila chrysaetos</i>)			X		X	
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)			X	X	X	
California condor (<i>Gymnogyps californianus</i>)	X					X
Le Conte's Thrasher (<i>Toxostoma lecontei</i>)		X		X		X
Allen's big-eared bat (<i>Idionycteris phyllotis</i>)			X	X	X	
Fringed myotis (<i>Myotis thysanodes</i>)			X		X	
Arizona myotis (<i>Myotis occultus</i>)			X			
California leaf-nosed bat (<i>Macrotus californicus</i>)			X	X	X	
Cave myotis (<i>Myotis velifer</i>)			X		X	
Spotted bat (<i>Euderma maculatum</i>)			X	X		X
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)			X		X	
Greater Mastiff Bat (<i>Eumops perotis californicus</i>)			X	X		X
Desert bighorn sheep (<i>Ovis canadensis</i>)				X	X	
Sonoran Desert tortoise (<i>Gopherus agassizii</i>)		X		X	X	
Two-colored beard tongue (<i>Penstemon bicolor</i>)			X		X	

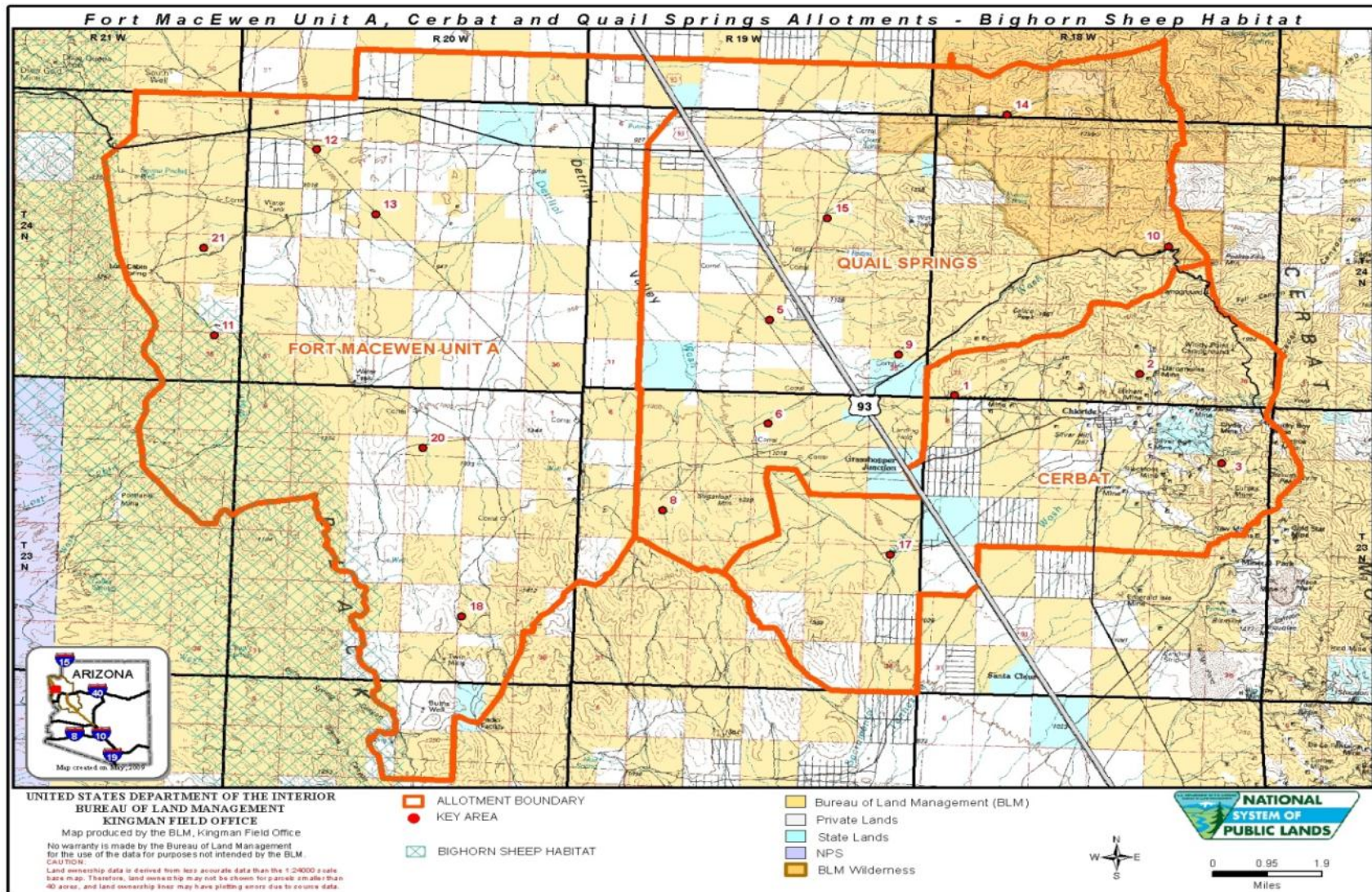


Figure 15. Desert bighorn sheep habitat in the Fort MacEwen Allotment.

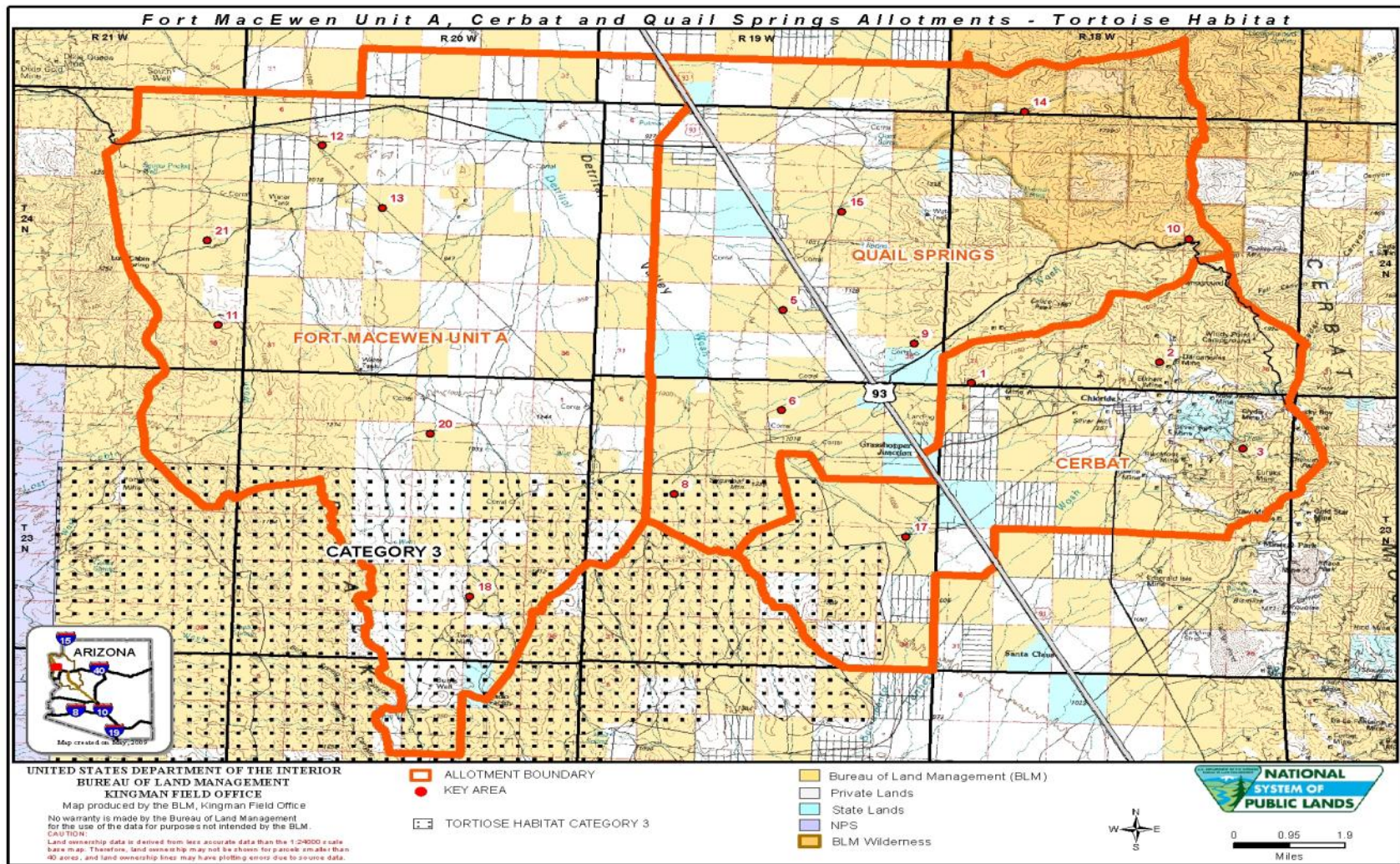


Figure 16. Desert tortoise habitat in the Fort MacEwen Allotment.

Golden Eagle: This species is found nesting and foraging within CQFM. It forages primarily on rabbits and other small mammals. It will nest in any of the habitats within the allotments where topography features include tall cliffs. Nesting areas are located nearby areas that contain large open areas for foraging. Within CQFM the Cerbat Mountains as well as the Black Mountains provide nesting and foraging features for this species.

Le Conte's Thrasher: This species is uncommon and usually very localized in distribution. It has been documented in lower Detrital Valley and habitat for this bird is found within CQFM (Corman and Wise-Gervais 2005). It is found in open creosote bush, and scattered mesquite habitats (Monson and Phillips 1981). In Detrital Valley this bird selects richer more diverse pockets of habitat. These pockets have clumped plants of taller greythorn, wolfberry, catclaw, and cholla. This is where this species chooses to nest (pers. comm. Hibbard, 2013).

Peregrine Falcon: Historically, the peregrine falcon ranged throughout North America and much of the rest of the world. Shooting, taking of eggs and young, poisoning and habitat destruction all contributed to the decline of peregrine falcons from much of their historic range. Peregrines in CQFM would nest on high, remote cliff ledges and forage in adjacent mountains and valleys. The peregrine falcon was delisted from the Federal endangered species list in 1999 and is a BLM and State listed species.

Western Burrowing Owl: Habitat for the western burrowing owl is found in all allotments within CQFM however, this species is only documented as nesting at one location on the Cerbat Allotment. This grassland specialist occurs primarily in open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments. Burrowing owls are dependent on the presence of mammals such as kangaroo rats and ground squirrels, whose burrows are used for nesting and roosting.

Bats: A number of sensitive bat species may be present on the allotments (see Table 13). Brief habitat descriptions are presented for these species.

Allen's big-eared bat: This species is known to forage and may roost in CQFM (Brown and Berry 2005). This bat roosts in abandoned mine shafts most often in ponderosa pine, pinyon juniper Mexican woodland, and riparian areas of sycamores, cottonwoods and willows. This species is often found near boulder piles, cliffs, rocky outcroppings, or lava flows.

Arizona myotis: This species is generally observed at higher elevations usually in ponderosa pine and oak-pine woodland near water. It is found along permanent water or in riparian forests in some desert areas. In Arizona this is usually in association with mixed conifer forests, including ponderosa pine/grassland, ponderosa pine/Gambel's oak, and aspen/ponderosa pine forests.

California leaf-nosed bat is known to roost in CQFM. Its preferred habitats are caves, mines, and rock shelters, mostly in lower elevation Sonoran desert scrub. Roost sites are usually located near foraging areas. This species likes desert scrub areas, roosts by day in caves, abandoned mines and tunnels.

Cave myotis: This species prefers cave habitat, but will choose other roosting areas if a suitable roosting cave is not available. These alternate areas can include mines, rock crevices, abandoned buildings, barns and under bridges. They are found primarily at lower elevations (the Sonoran and Transition life zones) of the southwest, in areas dominated by creosote bush, paloverde, brittlebush, and cactus.

Fringed myotis: This species typically roosts above 4000 foot elevation in tightly packed groups in rock crevices, caves, mines, large snags, under exfoliating bark, and in buildings. These sites may be day or night roosts. It may hibernate at lower elevations. It eats mostly small beetles and some moths that it forages from low desert scrub up to pine forest plant communities (AGFD 2013). This species is known to roost in CQFM.

Greater western mastiff bat: This bat is a year-round resident in Arizona where it ranges in elevations from 240–8,475 feet. It forages from the air or on the ground for insects such as moths, crickets, grasshoppers, beetles, bees, wasps, and ants. It forages over extensive areas of desert scrub at least 15 miles from the nearest likely roosting sites. It is found roosting in rugged rocky canyons with abundant crevices (AGFD 2013). It has been documented in the Black Mountain south of CQFM allotments however suitable roosting and foraging habitat is present in CQFM.

Spotted bat: This species is dependent on large isolated cliffs for roosting. It may forage in forests in the Cerbat Allotment.

Townsend's big-eared bat: This species is associated with areas containing caves and cave-like structures for roosting habitat. Generally, they are found in the dry uplands throughout the West, including Arizona desert scrub, oak woodlands, oak-pine forests, and pinyon-juniper forests. This species is known to roost in CQFM.

Desert bighorn sheep: The Black Mountains support one of the largest desert bighorn sheep populations on the continent. The range of desert bighorn sheep and livestock overlap on the Fort MacEwen allotment in the Black Mountains. Based on GIS map data, there are an estimated 8,600 acres of sheep habitat in the Black Mountains within the western edge of the Fort MacEwen allotment which comprises about 3 percent of the total bighorn habitat area of 258,079 acres (Figure 15). This species prefer a habitat of steep, rocky terrain for escape from predators, bedding, and lambing. It is found within the Mohave Desert scrub plant communities. They graze and browse of a wide variety of plant species of which grasses and forbs are preferred. When this food is not available they feed on a variety of other plants, including cacti.

Sonoran Desert Tortoise: Habitat for the desert tortoise, a federal candidate species is present on roughly 18,900 acres in the Twin Mills Pasture, Sugarloaf and Highway 93 pastures (Figure 16) which is about 4 percent of the total 479,357 acres of Category 3 tortoise habitat in the Black Mountains. The Sonoran population of the desert tortoise (*Gopherus agassizi*) is a candidate for listing under the Endangered Species Act but the listing is precluded by higher priority actions (Federal Register / Vol. 75, No. 239, December 14, 2010). The desert tortoises in the project area primarily inhabit rocky hillsides and gravelly desert washes below 3,530 feet. Tortoises in the Black Mountains are classified as Sonoran, although recent genetic research shows they are more related to the Mohave tortoise (McLuckie et al. 1995). Research into morphologic and behavior characteristics suggests there may be a gradation between Sonoran and Mohave populations in the Black Mountain ecosystem.

Two-colored beardtongue: The two-colored beard tongue (*Penstemon bicolor roseus*) a BLM sensitive species occurs on the Fort MacEwen allotment. This species is found from southern Nevada to northwestern Arizona and California. Within Arizona this species occurs in Mohave County in the Black Mountains and near Wilson Ridge. Habitat consists of gravel washes and disturbed roadsides, to outwash fans and plains. This species grows in creosote bush-desert scrub and desert wash plant communities, but is uncommon.

3.2.13.3 Migratory Birds

Executive Order 13186 requires the BLM and other federal agencies to work with the USFWS to provide protection for migratory birds. These species are protected by law and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits the taking of any migratory birds, their parts, nests, or eggs. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80). Migratory birds are known to occur within the Kingman Field Office area, many of which are known to use the habitat types present within these allotments.

3.2.13.4 General Wildlife

Habitat for multiple animal species and migratory birds occurs within these allotments. Species found include animals typical of the Mohave Desert such as Merriam's kangaroo rat, black-tailed jackrabbit, gray fox, kit fox, bobcat, coyote, speckled rattlesnake, chuckwalla, cactus wren, black-throated sparrow, golden eagle, and prairie falcon. Small upland game species include Gambel's quail, mourning dove, white-winged dove, and desert cottontail. Big game species include desert bighorn sheep, mule deer, and mountain lion.

4 ENVIRONMENTAL CONSEQUENCES

4.1 Potential Direct and Indirect Effects

This section describes the environmental consequences of those resources/concerns identified in Chapter 3 as present and potentially affected. Resources not present, and resources present and not affected are listed and described in Chapter 3 and if present not affected a rationale is provided.

- Areas of Critical Environmental Concern
- Fuels/Fire Management
- Invasive Non-native Species
- Lands and Realty
- Livestock Grazing Management
- Recreation
- Riparian
- Socioeconomics
- Soils
- Vegetation
- Wild Horses and Burros
- Wildlife, including Special Status Species and Migratory Birds
- Water Quality (drinking or groundwater)

4.1.1 Area of Critical Environmental Concern

4.1.1.1 Alternative 1 Proposed Action

A change in the grazing management within the ACEC is not expected to impact outstanding scenic values, open space near major population centers, rare and outstanding cultural resources, or mineral deposits. A change in kind of livestock use in the ACEC is not being proposed.

The proposed fencing would eliminate cattle drift onto LMNRA and would confine cattle to the Lost Cabin Squaw Pocket pasture. This would increase grazing pressure within this pasture when cattle are present however deferment and lower stocking rate would lessen the duration of cattle. Key Area 11 on the Fort MacEwen allotment is within the ACEC. Over the evaluation period it was found that Standards 1 and 3 are being met as well as the objectives for the BMEMP. This suggests that habitat values such as forage quality and quantity were adequate to sustain bighorn, mule deer, livestock, and wild burros. It is expected that these values would be maintained or improve under the proposed action. Water availability in the ACEC would remain unchanged and thus adequate water for all species would continue to be present. The proposed grazing management system would seasonally concentrate livestock in the ACEC increasing the density of ungulates (cattle, bighorn and deer) during these times. Bighorn and deer are known to avoid livestock (Bissonette and Steinkamp 1996, McIntosh and Krausman 1982, Wallace and Krausman 1987). For deer this may be related to forage resources, lack of cover, or behavioral avoidance. Competition for space would be partially mitigated by species habitat use preferences. It is expected that livestock would primarily use the lower, less rugged areas of the pasture while deer and bighorn would primarily use the more rugged areas. Two-colored beard tongue is not a preferred forage species for cattle and grazing on this species would be uncommon.

4.1.1.2 Alternative 2 No Action

It is expected that Key Area 11 would continue to meet Standards 1 and 3. Habitat for bighorn wild burros, cattle, and two-colored beard tongue would continue to be sustained because there would be no change in livestock grazing management and the current management has resulted in meeting the standards in the ACEC.

4.1.1.3 No Grazing Alternative

The ACEC value of livestock grazing identified in the Kingman RMP (BLM 1995) would be removed but all other values would remain. Habitat for bighorn and wild burros would be enhanced as these species would be the only ungulates using the ACEC and competition with livestock for forage and space would be eliminated.

4.1.2 Fire/Fuels Management

4.1.2.1 Alternative 1 Proposed Action

Proposed range improvements, deferment, rest, and rotation could have an effect on fire or fuels management. Maintaining the desired plant community as prescribed in the proposed action may help to reduce the spread of annual exotic grasses which are the primary fuel source for wildfire. The United States Department of Agriculture (USDA 2008) found that cheatgrass increases with the removal of native perennial herbaceous grasses and forbs which can occur as a result of overgrazing. The impacts of cattle grazing on fire intensity and frequency and fuels management is unclear for the Mohave Desert where annual exotic grasses are present in varying amounts depending on seasonal rainfall. The grazing of cattle has been considered as a tool to reduce annual grasses in small pastures where targeted grazing can be focused. Under the proposed action this management tool is impractical in the CQFM pastures where cattle would not be confined to small pastures. In order for cattle grazing to be an effective tool to reduce fuel by annual grasses, intensive grazing would be required in small pastures during a short period of the red brome life cycle when the plant is palatable (McAdoo et.al. 2007).

Temporarily closing Twin Mills Pasture until objectives are met would have a negligible effect on fire or fuels management. Cattle would graze on annual grasses but grazing would not reduce the risk of fire following a wet winter. It is assumed that native vegetation cover which is currently not meeting objectives would begin to increase without grazing pressure. This could change the fire frequency in the Twin Mills Pasture but it is unclear whether the effects would be observable in the short term.

4.1.2.2 Alternative 2 No Action

The effects on Fire/Fuels Management by the No Action Alternative would be similar to Alternative 1 Proposed Action. However, under the No Action Alternative, annual grasses would continue to spread while key plant species are expected to decrease on pastures that are not meeting objectives. This could ultimately cause a buildup of fuels because there would be more open space for the annuals to grow.

4.1.2.3 Alternative 3 No Grazing

An assumption could be made that no grazing would potentially increase the intensity of fires in the area. However, large fires in CQFM have burned under yearlong grazing up to three years following El Nino winters. Thus no grazing would probably have a minimal to no impact on fire frequency and size. After three years following wet winters the red brome breaks down, fuel continuity is interrupted, and fire hazard is reduced whether there are cattle present or not. The impacts would be similar to the proposed action as key species are expected to increase and there would be less open space for exotics.

4.1.3 Invasive Non-Native Species

4.1.3.1 Alternative 1 Proposed Action

Maintaining the desired plant community as prescribed in the proposed action is necessary to reduce the spread of undesirable plant species. Composition and cover of desired forage species is expected to maintain or improve under the proposed action would potentially reduce open space between perennial plants where invasive annual grasses and forbs can grow. USDA 2008 found that cheatgrass increases with the removal of native perennial herbaceous grasses and forbs which can occur as a result of overgrazing. This is due in part because cheatgrass can out-compete remaining native plants in accessing soil water and nutrients. It has been found that proper range practices can help prevent the spread of these plant species (Sheley 1995).

All of the invasive species described in Chapter 3 can be spread by animals such as livestock, wild burros, mule deer, and bighorn as the seeds can become attached to hair and be transported. Cheatgrass, red brome, and Mediterranean grass are expected to be present in varying amounts depending on the amount and timing of annual rainfall. Malta starthistle is able to persist on the highway right of way because of the increase in water runoff from the road and might invade spring sources because of the greater moisture availability in these areas. It was not found at the sources on CQFM however it has been found at springs further north. Sahara mustard is found along the roadsides on CQFM and may spread to sandy soils in wet winters on the rangelands. In southwestern Arizona during wet winters Sahara mustard is spreading by wind onto rangelands in areas where cattle have not been present for 20-30 years. In CQFM puncturevine appears to be restricted to areas highly disturbed by humans. It has not been found around the livestock facilities on these allotments. It is apparent that the spread of these species will not be totally prevented but if the DPC is kept intact it is more difficult for invasive species to take hold and dominate this area.

4.1.3.2 Alternative 2 No Action Alternative

In key areas where Standard 3 health standards are not being met it is expected that invasive non-native species would increase as a result of year round grazing. The lack of rest and continuous grazing pressure has caused a change in the frequency of key plant species (BLM 2010) in some key areas on CQFM. When the frequency of key species declines it opens up space for invasive annual grasses and forbs to invade.

4.1.3.3 Alternative 3 No Grazing Alternative

Removal of livestock would not eliminate the presence of invasive-non-native species on the allotments as some (red brome) are already common throughout the area. Removal of grazing by domestic livestock does not automatically lead to the disappearance of cheatgrass (Young and Evans 1978). Wild burros, bighorn, and mule deer would continue to be vectors for the spread of invasive plants. The removal of grazing is expected to result in an increase in the frequency of key plant species and movement towards the DPC objectives. If key forage plant species are present in sufficient amounts at these locations it is highly likely that this would serve to limit the open space between perennial plants where invasive annual grasses and forbs can grow

4.1.4 Lands and Realty

4.1.4.1 Alternative 1 Proposed Action

The proposed range improvements of fencing, one cattleguard, and maintenance of existing fences would reduce impacts to landowners that are living on 40 acre and smaller parcels within the allotments by reducing the amount of fencing that landowners would encounter along roads and vehicle ways such as washes. Many of the existing fences cross private lands and some block access points (across washes).

This alternative would reduce the amount of pasture fences that need to be maintained and helps to alleviate the issue of landowners cutting fences and leaving gates open.

4.1.4.2 Alternative 2 No Action

The 1980 AMP is not implementable under the current condition because of conflicts between the private landowners and the permittee. The range improvements which separate the pastures described in 1980 cannot be maintained as planned. Private land dispersed throughout the pastures which is not under control of the permittee has been developed into 40-acre residential areas. Small communities or private developments may not be fenced and fences near or surrounding these areas are often cut by landowners. This may result in landscape degradation as cattle cannot be managed in accordance with the AMP and are subsequently allowed to continuously graze all areas without rest.

4.1.4.3 Alternative 3 No Grazing

If the land use plan is amended to make CQFM unavailable for grazing the permittee would potentially remove the range improvements and/or be compensated by the BLM for the range improvements. The removal of range improvements would eliminate landowner conflicts associated with the fences' restriction of access. With no livestock present the landowners would not have to fence their properties to keep cattle out as there would be no cattle present.

4.1.5 Livestock Grazing Management

4.1.5.1 Alternative 1 Proposed Action

The permittee would be able to have a sustainable livestock operation with similar or better economic returns with lower stocking rates, lower utilization limits, and with the plan for pasture rest, rotation and pasture deferment. This livestock operation would allow the permittee to retain history and cultural identity and pass these on to future generations. The permittee would be required to monitor his livestock and move them on a regular basis according to the schedule in the proposed action. The permittee would incur more costs as the deferred grazing rotation system is more "move" intensive and would require the permittee to move livestock three times throughout the year compared to the No Action where cattle are not handled until spring and fall roundup. The proposed partial change in preference in the Quail Springs allotment from 1 animal unit (AU) yearlong to 10 horses for two months would reduce his horse feeding costs and allow the permittee to develop more useful and valuable range horses. Horses accustomed to grazing on rangelands are better able to navigate and more stable on rough terrain when ridden

Deferment and rest would result in more work and higher costs (more moves) in some areas of the grazing management for the permittee compared to the no action alternative. However, fuel and labor costs would potentially be reduced or offset by managing a much smaller area at any one time. The permittee would be better able to keep track of his cattle as they would not be spread out over the entire three allotments at the same time. He may be able to run fewer bulls as the bulls would have less area to search for cows. Calving could become more synchronized under this alternative which means the calving period would be reduced from year-round to a few months out of the year. This means when he goes to gather calves in the fall most calves would be ready for branding and culling at once. When the calves go to market they would be of more uniform sizes and weights which would bring more per pound upon selling.

Once a forage bank is developed under the rotation system cattle should be able to maintain weight and breed back each spring and therefore potentially increase the calf crop percentage and calf weaning weights. Holechek et al. 1999 found that calf crops and weaning weights were greater on conservatively stocked pastures. The rotation system could result in improved plant vigor and productivity which could provide higher amount and better quality forage for livestock and potentially result in heavier calves. Heavier calf weights would result in more economic gain for the permittee. Residual vegetation and increased plant vigor and productivity may reduce the need for destocking during drought years.

Holechek et al. 1999 found that exposure to risk from drought and low cattle prices was reduced and the probability of improved forage production was higher when the vegetation is conservatively used. Thomas et al. 2007 found that grazing at light use (25% to 30%) avoids herd liquidation in short term drought.

Under the proposed action cattle would be handled more (more moves) and become more used to being handled resulting in gentler cattle for handling and branding and thus less stress for the cattle and their handlers. It has been found that cattle become habituated to being moved and experience less stress over time. It has been found that when cattle become familiar to the move sequence they will often move themselves once the gates are opened.

Holechek et al. (2003), recommends that grazing intensity in areas of the Southwest where annual precipitation is less than 12 inches, should be between 25 percent and 35 percent. Utilization limits and seasons of use would provide a sustainable forage base for livestock grazing. An average forage utilization of 40 percent has been shown to benefit plant production and resilience (Valentine 1970, Van Poolen, et al. 1979). The reduction in utilization should increase plant vigor and seed production of various grasses, forbs, and shrubs in both pastures which would increase available forage and animal productivity. It is expected that the diversity of palatable plants would be maintained or improved under the proposed action. According to Meen (2000) available crude protein in plants decreases as plants are re-grazed, therefore, lower utilization levels and seasonal rotation should provide livestock and wildlife with more available crude protein.

The proposed fence realignment and extension, and cattle guard would allow for improved livestock control on the allotment. Installation of the cattleguard would reduce the likelihood of gates being left open and fences cut by the public. Closing the Twin Mills Pasture to cattle grazing until the DPC objectives are met would affect the permittee's livestock grazing operation by temporarily reducing the amount of acreage available for grazing. Limiting grazing use in the Cerbat Pasture to fall and winter until a perennial watering facility for livestock is developed in this pasture would not affect the permittee as over the last 13 years he has only used the Cerbat Pasture in the fall and winter because of the lack of water during the spring and summer months. However the removal of the AUMS from the areas he cannot use would temporarily reduce his cow herd. Development of a perennial watering facility would eliminate this issue in the Cerbat Pasture. Removal of the Cerbat and Twin Mills Pastures would simplify livestock grazing management as there would be less acreage to manage.

The grazing permittee would incur costs associated with the maintenance of existing range improvements include repairing the west boundary fence of the Lost Cabin Squaw Pocket Pasture and the west and south boundary fences of the Twin Mills Pasture. The permittee would need to repair the Lost Cabin Squaw Pocket fences within one year of the date of the permit renewal or they would be closed to grazing. If these pastures are closed there would be a reduction in acreage available for livestock grazing and a subsequent suspension of preference for the AUMs within that pasture. It should be noted that the Twin Mills Pasture fence on the northwest edge adjacent to the Lost Cabin Squaw Pocket fences also requires fence repair in order to keep cattle out of the Twin Mills pasture and to prevent cattle from entering the LMNRA.

Approximately 30 acres of grazing land and therefore forage for livestock grazing would be removed as a result of the construction of the three 10 acre exclosures.

Ultimately, implementation of the Proposed Action would allow range conditions for the three allotments, currently in the "Improve" Category, to begin an upward trend for Standard 3 over the life of the 10-year permit.

4.1.5.2 Alternative 2 No Action Alternative

The Alternative 2 No Action Alternative would maintain the current level of livestock grazing authorized for the permittee, which would provide some degree of stability for the permittee's livestock operation. The terms and conditions from the AMP for each allotment would be followed. Permit renewal under this alternative would likely result in a continuation of Standard 3 not being met at some of the key areas. The operation may become unsustainable as frequency of key species at key areas not meeting standards continue to decline. This would result in a reduction of productivity of the key species, therefore less forage to sustain the livestock operation. The No Action Alternative could result in lower calf weights, uneven calf sizes, lower breed back percentages, and an inability to manage pastures because fences are unmaintained. The permittees risk associated with drought would go up as the need to destock more often would increase. Destocking during a drought means cattle may be sold at lower prices as the market would be flooded with cattle from other ranches that are destocking. Once the permittee would be able to restock the prices to purchase a mother cow would be much higher as others would also be trying to do the same thing.

There would be no change in kind of livestock in the Quail Springs allotment from 1 AU to 10 horses for two months. The permittee would have higher horse feeding costs and horses not as adapted to travelling through rough terrain. These horses would then be less valuable upon sale. Not constructing the proposed fence realignment and extension, and installing the cattle guard would make the control of livestock difficult as cattle can get out of the allotments onto the Lake Mead National Recreation Area without these improvements. It is possible that the public would continue to leave the gate open where the cattleguard is proposed and possibly cut fence to gain easier access.

The three 10 acre exclosures would not be constructed under this alternative therefore 30 acres of grazing land and therefore forage for livestock grazing would not be removed from grazing.

The permittee range improvement costs would be higher under this alternative as the Terms and Conditions of the 1980 AMP would be followed, and the permittee would be required to construct the range improvements identified in the AMP to be in compliance with the plan.

4.1.5.3 Alternative 3 No Grazing Alternative

If the no grazing alternative is chosen, the renewal of the 10 year permit for the CQFM allotments would not be authorized. The Kingman RMP could be amended to permanently remove the allotments from grazing. The amendment would be posted in the Federal Register. The permittee would discontinue his cow/calf business and the allotments would not be available to transfer preference to another permittee. There would be no income to the community from the cattle operation.

4.1.6 Recreation

4.1.6.1 Alternative 1 Proposed Action

Under the proposed action there would be fewer fences because pastures would be combined into units that are more efficient for movement of cattle and implementing the deferment, rest, and rotation. Therefore recreational users would encounter fewer fences that may restrict access. Cattle would be present in each pasture only part of the year. Therefore, those who prefer to recreate in areas without cattle can do so. There would still be opportunity to view cattle at other times of the year as cattle are rotated through the pastures. Standard 2 would be met at Big Wash Spring as it would be excluded from livestock grazing. Seasonal deferment of cattle may allow Swicker Spring enough time to recover from livestock grazing during the rest periods. Hunting and nature viewing opportunities would improve at these two springs as full development of vegetation i.e. wildlife habitat would occur under this alternative.

4.1.6.2 Alternative 2 No Action

Recreational users would continue to experience fences and cattleguards that may restrict access. Cattle would be present in all areas most of the time for visitors to view which could be positive or negative depending on the viewpoint of the individual. Hunters would be able to continue to hunt at springs and livestock waters. The capacity and value of recreation could decline because rangeland health factors such as perennial plant frequency and cover in key areas not meeting standard 3 and in a downward trend are expected to continue declining. Key areas not meeting standard 3 but are static are not expected to improve and potentially may decline as well. Degradation of riparian areas used by livestock and not meeting Standard 2 would remain degraded. This would lessen the opportunity for nature observation in these areas as vegetation is excessively used by cattle.

4.1.6.3 Alternative 3 No Grazing

Recreation access would be improved as proposed range improvements and existing range improvements in the 1980 AMP would not be built or maintained resulting in fewer fences where recreational users access public land within the allotments. Visitors would not see cattle which could be positive or negative depending on the viewpoint of the individual. Hunters would still be able to access springs for hunting. Livestock waters would be removed and therefore big game and big game hunting may be reduced or eliminated around those locations. The rangeland health such as perennial plant cover is expected to improve which would consequently enhance visitor experience of nature observation. Standard 2 would be met at Big Wash Spring and Swicker Spring as livestock grazing would cease and full development of vegetation i.e. wildlife habitat would occur under this alternative.

4.1.7 Riparian

4.1.7.1 Alternative 1 Proposed Action

Riparian habitat would improve under this alternative after the existing fence around Big Wash Spring is repaired. The 100 foot by 50 foot fence would exclude livestock from the spring source and allow riparian vegetation to expand and reach its full potential of growth. In southeastern Arizona, density of herbaceous vegetation increased four to six fold following the removal of cattle (Krueper et al. 2003). This would enable progress towards meeting Standard 2 at Big Wash Spring. It is expected that Standard 2 would be met within 3 years at Big Wash Spring.

Reducing the number of cows and implementing a grazing rotation system on the allotments would accelerate recovery of the unfenced springs. Rotational grazing can be useful in improving riparian areas if grazing is kept at light or moderate levels (Krausman et al. 2011). Soil disturbance and associated sediment would decrease because cows would not have the opportunity to linger in these areas for long periods of time. Wild horses would also trample and graze at spring sites however there are only an estimated 5 horses. Riparian conditions would improve as trampling and associated fine sediment would decrease while riparian vegetation density would increase over several years. Over the long term (5 plus years), riparian vegetation would reestablish, filling in areas of bare ground, stabilizing banks, and increasing shade. Monitoring by BLM employees would determine the efficacy of the grazing system and would identify future management changes, if needed.

It is assumed that by meeting or maintaining DPC objectives, lowering use limits on key species, and lowering the stocking rate along with scheduled rest periods the xeroriparian areas would be maintained or improved.

4.1.7.2 Alternative 2 No Action Alternative

Big Wash Spring was determined to be non-functional due to grazing and trampling by cattle which is limiting riparian development. Wild horses would also trample and graze at spring sites however there are only an estimated 5 horses in CQFM. Grazing under this alternative would continue to compromise the physical integrity of Big Wash Spring by increasing compaction, bank disturbance, and sedimentation

because a fence would not be repaired. Soil disturbance would continue because access to the area around the spring would remain, leading to increases in fine sediment. Continued soil compaction would also result reducing the water storage capacity of these areas. Under the current grazing system the riparian area around Big Wash Spring and other unfenced springs including Swicker Spring would continue to be used by livestock and associated bank disturbance, fine sediment, compaction, and bare ground would continue. Therefore this alternative would continue to cause these areas to not meet Standard 2 (Riparian/Wetlands).

Not meeting DPC objectives at some key areas, higher use limits and stocking rates without any scheduled rest period would continue to affect the vigor and reproductive capability of key species that are found in desert washes or xeroriparian areas. Catclaw and mesquite tree would be grazed year round and their seedpods would be always grazed when ripe in the summer.

4.1.7.3 Alternative 3 No Grazing Alternative

Removing all cattle from the allotments would lead to improvement in the condition of springs and associated riparian areas on the allotments. However, the estimated five wild horses would still have access to all unfenced springs. Riparian habitat conditions in the allotments would improve as trampling and associated fine sediment would decrease while riparian vegetation density would increase. Compaction of riparian areas from livestock grazing would be reduced, improving ground water storage and recharge. Over the long term (5 plus years), riparian vegetation would reestablish, filling in areas of bare ground, stabilizing banks, and increasing shade. It is anticipated that all riparian areas that are currently at PFC would remain properly functioning and that those riparian areas currently not at PFC would achieve properly functioning condition under this alternative.

4.1.8 Socioeconomics

4.1.8.1 Alternative 1 Proposed Action

Issuance of the permits under the proposed action would allow the permittee to continue the grazing operation with some degree of predictability during the 10-year period of the term permit and would allow a historical and traditional use of the land to be maintained. A reduction to the stocking rate and removal of the Cerbat and Twin Mills pastures from grazing would result in a reduction in herd size. Holechek et al. (1999) found that a reduction in stocking rate resulted in a higher percent calf crop, higher weaning weights, lower supplemental feeding costs and higher grazing capacity. He also found that the probability of improved forage production was higher and there was less exposure to risk from drought and its indirect effect of low cattle prices when adjusting the stocking rate to a lower level. The overall stability to the local economy would be an indirect result of implementing the proposed action.

The reduction to 203 AUs with a rotation system would allow the permittee keep better track of his livestock than under current grazing. The rancher could implement a breeding program such as 90 days when bulls are with the cows and this would ensure a distinct calving season. This would result in uniformity in calf size when taken to market. It is expected that the calf crop percentage would be approximately 85 percent. This has been the result in other ranches in Mohave County who employ a rotation system with breeding program. It is also expected that calf weights would increase (Holechek et al. 1999). A 10:1 cow to bull ratio results in 19 bulls and 184 cows. Multiplying 184 cows by 85 percent results in 156 calves annually which is a 33 calf difference from the No Action Alternative.

4.1.8.2 Alternative 2 No Action

Impacts of the No Action alternative to socioeconomics would be similar as for Alternative 1. However there would be a larger number of AUMs permitted. The income to Mohave County could be proportionally higher than for Alternative 1. The calf crop percentage and weight at sale is not expected to increase under the existing terms and conditions of the permit. Therefore the overall income from the cow calf operation may not provide a contribution to the local economy.

The 30 year average use for these allotments has been approximately 300 AUs. Using a 10:1 cow to bull ratio results in 30 bulls and 270 cows at a 70 percent calf crop equates to 189 calves annually. With a yearlong breeding season and yearlong grazing cows are spread out and calves are dropping at any time of the year. This results in calf loss from inability to adequately monitor calving cows, uneven weights at weaning and size at sales. The rancher would have to handle the cattle more often to remove calves that are maturing at different times resulting in higher operation costs.

4.1.8.3 Alternative 3 No Grazing

Should livestock grazing no longer occur on the CQFM allotment, the Mohave County revenues from grazing fees would be reduced. The permittee would have to purchase or rent pasture to support his livestock. Employment associated with the management of the grazing permit would be foregone.

4.1.9 Soils

4.1.9.1 Alternative 1 Proposed Action

The Rangeland Health Evaluation (BLM 2010) findings show that Standard 1 for soils is being met at all of the allotments. Under the proposed action, livestock grazing on the CQFM Allotments would continue to have a localized, negative effect on soils associated with congregation areas such as watering sites, and corrals through soil compaction caused by the concentration of livestock in a localized area. Soil compaction results in accelerated erosion by allowing rapid run-off of water because of the lack of filtration, and impedes seed germination. Seasonal rotation of pasture use and control of animal movement with installation and maintenance of fencing would allow some areas of compacted soils to improve (de-compact) slightly during periods of non-use. The vast majority of soils in the allotments would continue to achieve the soils standard.

Grazing animals can apply compressional and shear forces to the soil. The crust response to these disturbances is highly variable. Moisture and burial are two important factors relating to the degree of impact. With coarse textured sandy soils, moist crusts are better able to withstand disturbances than dry soils.

4.1.9.2 Alternative 2 No Action

Impacts of the no action alternative would be greater than the proposed action because livestock would be allowed to graze in all areas simultaneously with no areas receiving yearlong rest which is essential for crusting and stabilization for soil surfaces.

4.1.9.3 Alternative 3 No Grazing

Soils in the CQFM would be allowed to rest and would continue to meet Standard 1.

4.1.10 Vegetation

4.1.10.1 Alternative 1 Proposed Action

The deferred grazing system implemented under this alternative would mitigate grazing impacts on vegetation by adjusting the timing of use, reducing use limits on key species, disallowing additional ephemeral grazing, and lowering stocking rates. It is expected that the DPC and BMEMP objectives would be maintained or reached under this alternative. This alternative would provide back to back spring grazing rest, and back to back fall and winter rest two years out of three, in both the West and East Units. It provides one late summer and one full summer rest back to back two years out of three. This type of rest schedule allows plants to fully grow ungrazed during both growing seasons for two years in a row. This will allow both cool and warm season plants to set seed, tiller, and allow stolons to set, thus establishing new plants, two years out of three and allow for rest during the critical growth periods of spring and summer. This would increase key species vigor and cover and aid in seedling establishment.

Research has demonstrated that properly managed livestock grazing is designed to have minimal impacts to rangeland resources. Holechek (2006) reported that livestock grazing at light to moderate intensities can have positive impacts on rangelands in the Southwest. Conservative grazing (30% to 35%) is a reliable way to increase forage production and improve vegetative composition on degraded rangelands (Holechek et.al. 1999). Holechek et al. 2003 found that trend improved under conservative grazing intensities of about 25 to 35 percent use of key forage species even with drought occurring during part of the study period. Plants can withstand removal of a part of their current year's growth and still achieve normal growth the following year. The deferred grazing system proposed for these allotments under this alternative would provide for the physiological needs of the key species; the scheduled rest periods would maintain the vigor and productivity of the key species and other vegetation. It is expected that the diversity of palatable plants would be maintained or improved under the proposed action.

Implementing the changes under this alternative for the purpose of ensuring that DPC and BMEMP objectives are achieved would help assure that rangeland health, soil conditions, and ecosystem function are met. This, along with implementation of the prescribed utilization levels and reduced stocking rate would maintain or improve the ecological condition of the allotments. Moving the livestock three times as proposed in this alternative would provide scheduled rest during the spring and summer growing seasons for grasses, shrubs, and forbs thus improving the rangeland's ability to function and support sustainable grazing use.

Conservative stocking rates in the form of reserve forage or grass banks are well established strategies for contending with economic and drought risk (Thurow and Taylor 1999). Adjusting stocking rate as proposed may prevent excessive use of key species and allow forage to accumulate. The extra herbage left from under grazing in the wet years will help plants recover from drought and may build feed reserves (Holechek 1999). Stoddart et al. 1975, Hutchings and Stewart (1953), and Heady (1975) suggest that rangelands stocking rates be lowered than average forage production to account for variable forage production during drought and to prevent or reduce harm to vegetation. Hutchings and Stewart (1953) and Heady (1975) suggest that stocking at maximum capacity will result in overgrazing up to one half the years. Hutchings and Stewart (1953) suggest that rangelands be routinely stocked at 75 percent of grazing capacity to account for drought.

Valentine (1964) concluded that when improving black grama rangelands a 30 to 35 percent use limit was a sound management approach. He found that moderate grazing use (35%) produced 70 percent more forage than proper (50% use) and more than double heavy grazing (60% use). Paulsen and Ares (1962) recommend that a coefficient of 30 percent be used when stocking rates are assigned to black grama rangelands and that not more than 40 percent of the black grama be removed in any year. Navarro et al. 2002 found after 48 years of conservative use (34%) on BLM desert rangelands in New Mexico, that livestock grazing was sustainable.

Closing the Twin Mills pasture to livestock grazing would speed up the plant community post-fire recovery process allowing the perennial vegetation a full opportunity to reach full growth, set seed and reproduce. It is expected that key species frequency, cover, and composition would increase with the closure. It is expected that the diversity of palatable plants would be maintained or improved under this alternative. DPC objectives for this pasture are more likely to be achieved under this alternative compared to the No Action alternative.



Figure 17. Key area # 18 in the Joint Use Area of the Twin Mills Pasture, Standard 3 is Not Met

The construction of the three exclosures will provide a control area to compare grazed and ungrazed areas within the pastures where they are located. This is helpful when analyzing the data collected to determine if the standards are being met.



Figure 18. Key area # 20 in the Joint Use Area of the Twin Mills Pasture, Standard 3 is Not Met

If future monitoring indicates any areas within the allotments are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made. Thus, ecological status of these allotments would be maintained and/or improved, moving the allotments toward meeting Standard 3 at all key areas.

4.1.10.2 Alternative 2 No Action Alternative

Yearlong livestock grazing practices can directly affect vegetation by reducing plant vigor, reducing reproductive capabilities, decreasing or eliminating desirable forage species, causing loss of, or injury to, individual plants from trampling, particularly near water developments, and increasing soil instability and erosion. The current grazing system (No Action) has resulted in Standard 3 not being met at several of the key areas and long-term downward changes in the frequency of key species occurred at several key areas. This downward trend is expected to continue if livestock use consistently exceeds conservative use levels, livestock repeatedly (year after year) use key species during the same growing seasons, and seed head removal and stolon removal of key species inhibits reproduction. The excessive removal of leaves, seed heads, and stolons affects the ability of plants to produce carbohydrates, reproduce, and therefore sustain themselves during normal rainfall years and especially during drought years. This could eventually further reduce range carrying capacity. Currently under the No Action Alternative all plants are grazed yearlong and in many key areas trend is down for key species, plant vigor is low, productivity is low, and reproduction appears to be negatively affected as few seed heads, stolons, tillers, and few seedlings of palatable plants can be found. Trend in key species frequency is expected to continue at a downward trend or remain static. Composition of key species is not expected to increase and may decrease in those areas experiencing a downward trend. It is expected that the diversity of palatable plants would not be maintained.

Keeping the Twin Mills Pasture open to yearlong livestock grazing, not reducing stocking rates or use limits is expected to impede the plant community recovery process. Perennial vegetation would not have the complete opportunity to reach full growth, set seed and reproduce. It is expected that key species frequency, cover, and composition would not increase and potentially decrease under this alternative. The DPC objectives would not be met under this alternative.

Not constructing the three exclosures as in the proposed action would not give the BLM an opportunity to compare grazed and ungrazed areas within the pastures where they are located. Data would then be more difficult to analyze to determine if the standards are being met.

4.1.10.3 No Grazing Alternative

Under the No Grazing Alternative, livestock grazing on these allotments would cease. Individual plant populations including key species within commonly grazed plant communities would have an opportunity to complete all phenological growth stages. No vegetation would be trampled or removed by cattle. Standing biomass levels would increase. Impacts to the ecological function of these plant communities would be confined to natural disturbances (e.g., fire, insect damage, spread of invasive species and drought) and other non-anthropogenic induced effects. The speed of recovery in areas not meeting objectives would depend on amount and location of seed sources, current distribution and abundance of key species, and seasonal distribution and quantity of annual rainfall. It is more likely desired plant community objectives would be reached at a faster rate. Trend in plant frequency is expected to turn upward and composition and cover of key species is expected to increase. The diversity of palatable plants is expected to be maintained or improved under this alternative.

Under this alternative the three exclosures would not be constructed however data to determine if standards are being met would still be collected at the key areas. Not constructing the three exclosures as in the proposed action would not give the BLM an opportunity to compare the vegetation inside and outside of the exclosures. The pastures would still be grazed by wildlife, wild horses and wild burros. Data would then be more difficult to analyze to determine if the standards are being met.

4.1.11 Water Quality and Quantity (Drinking and Ground)

4.1.11.1 Alternative 1 Proposed Action

Under the proposed Action there would be no change to the quantity of water pumped from wells or consumed by livestock from springs as opposed to the No Action Alternative. Site visits to the allotments (during rangeland health evaluations) did not indicate that current livestock use is altering water quality. Thus, no effect to ground-water quality is expected from the proposed action. The proposed well at Cerbat Pasture would not change groundwater levels in the aquifer.

An existing fence would be repaired or replaced at Big Wash Spring to exclude livestock from the spring source. Because wildlife would continue to have access to the spring, the change in water quality, if any, is unknown.

4.1.11.2 Alternative 2 No Action

Ground-water in the area of the allotments is remaining stable or increasing slightly (Anning et al. 2007). Livestock grazing has been ongoing in the allotments and therefore depletion of ground-water as a result of livestock grazing in the Sacramento and Detrital Valleys would not occur.

Under the No Action Alternative, existing range improvements would be maintained which would not cause a reduction to water quality or quantity of ground-water.

4.1.11.3 Alternative 3 No Grazing

There would be no change to water quality from the No grazing alternative. Cattle would not be grazing on the allotment however wild horses, wild burros, and wildlife would still graze on the allotments.

4.1.12 Wild Horses and Burros

4.1.12.1 Alternative 1 Proposed Action

By renewing the 10 year grazing permit direct competition for forage between cattle and burros or horses would continue. However, the management practices proposed under this alternative are designed to manage livestock grazing to provide for a diversity of wildlife and plant species, maintain ecological functioning systems, and maintain and/or improve ecological condition.

Under the proposed action it is anticipated that forage available (both type and amount) for wild horses and burros would increase and plants would be healthier within the allotments in the Black Mountain HMA and Cerbat HA. Implementing the proposed grazing system on these allotments to achieve DPC objectives would allow for less competition for food and water between livestock and wild horses or burros around key areas. This grazing system would result in improving the ecological condition of the allotments (see "Vegetation" discussion), thus increasing forage. Compared to the no action alternative, impacts to burros would be lessened by a grazing system that rests pastures and reduces livestock AUMs, which would result in reduced areas of moderate to heavy cattle grazing within the HMA. The BMEMP allocates 30 percent of forage to burros within the Joint Use Area. If forage for burros increases burros would be healthier, their recruitment rate could increase and there would be less competition with livestock for water and forage. With greater forage availability, burros may travel less and use specific areas more intensively.

Proposed fencing on the west side of Highway 93 may limit or alter movement patterns, and reduce drift of burros from NPS lands to BLM lands and between allotments. Currently, approximately 50 percent of the pastures are delineated with natural boundaries which burros seem to be able to move across. No studies have been conducted on burro movements between allotments utilizing natural boundaries in the Black Mountains. If burros are unable to traverse the natural boundaries this may allow for easier

management by the BLM by confining them to certain areas or an allotment by fencing. However, confining them to a smaller area may compromise herd viability and inbreeding could occur.

Under this action, if cattle rotations are controlled by water, burros may fall subject to the same movements as cattle. This could force more burros into areas that are only occasionally used (Black Tank and Valley pastures) for longer periods of time as well as limit their movement across the HMA.

The resting of pastures would allow the BLM to eliminate use by cattle for up to one year and allow BLM to collect burro specific utilization data in those pastures.

Under CFR 43 4710.5(b) “All public lands inhabited by wild horses or burros shall be closed to grazing under permit or lease by domestic horses and burros”. The ten horses would be permitted for up to two months in the Quail Springs Pasture of the Quail Springs Allotment which is not part of the Cerbat HA. As long as the fences are in good working condition the mixing of domestic horses with wild horses would be unlikely. Keeping the fences in working order should not be a problem because they are located on public lands or private lands controlled by the permittee. If domestic horses get into the herd area the authorized officer may establish conditions for the removal of the domestic horses from public lands adjacent to or within the herd area to prevent undue harassment of the wild horses or burros (CFR 43 4710.6). The permittee may also be subject to unauthorized use if the domestic horses are found within the herd area.

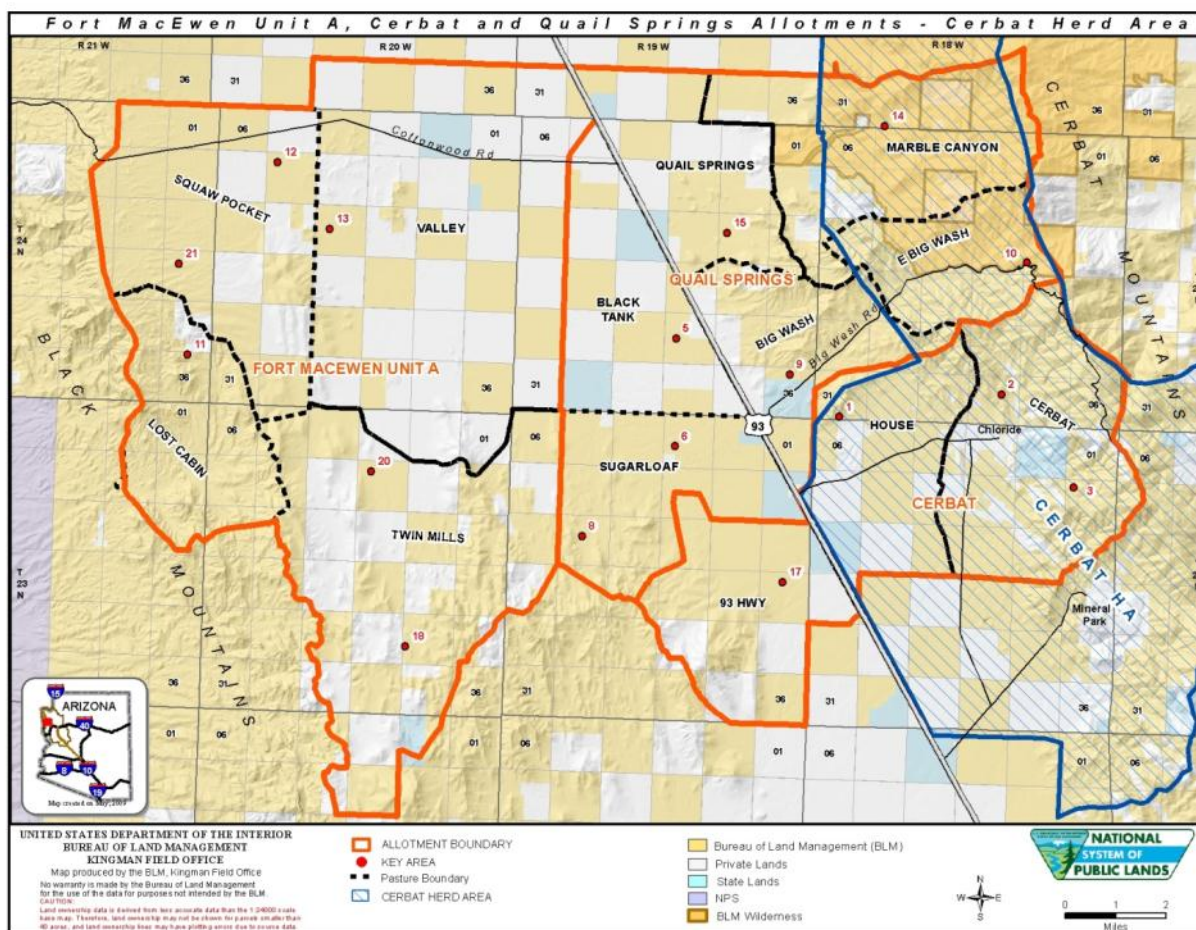


Figure 19. Cerbat Herd Area Boundary and the Quail Springs Allotment

4.1.12.2 Alternative 2

Range conditions at some key areas would continue to decline increasing competition for forage between cattle, burros and horses. Declining forage conditions and amounts could cause burros and horses to forage on less desirable species. In combination with cattle grazing this could lead to desired forage species of big galleta, black grama, bush muhly, Mormon tea, and globe mallow to disappear or become scarce. These animals would then need to switch to less palatable species such as flattop buckwheat which provides low quality forage to burros and horses.

4.1.12.3 No Grazing Alternative

In the long term, the removal of cattle from the allotments would reduce competition for forage, space and water in riparian and upland wild horse and burro habitats. In the short term the shutting off of water under the no grazing alternative would seasonally exclude wild horses and burros from those pastures unless natural perennial waters (springs) existed. In the long term, BLM or some other entity would need to assume responsibility to maintain some of the waters allowing use of these areas by wild horses and burros. If cattle were removed from the allotments, the AML for burros and horses could be increased as forage could be reallocated leaving more forage for wildlife, horses, and burros.

4.1.13 Wildlife including Sensitive Species

4.1.13.1 Alternative 1 Proposed Action

Candidate Species

Desert Tortoise: In the short term, the proposed action would close the Twin Mills pasture until DPC objectives are met. It is expected that the frequency, cover, and productivity of key species such as bush muhly, black grama, and big galleta, all of which are food plants for tortoise, would increase compared to the No Action alternative. It is also expected that cover and composition of other perennial plants such as shrubs would increase as the recovery of the pasture progresses. Annual grasses and forbs provide a substantial amount of forage for tortoise, even after they dry out in the summer (Van Devender 2002). Ephemeral permits for grazing on annual plants would not be authorized during the next ten years while the perennial plant communities regain their ecological health i.e. meet the Arizona Standards for Rangeland Health. During this time this would eliminate any competition between tortoise and livestock for forage.

In the long-term, once DPC objectives are met in the Twin Mills pasture, cattle grazing would resume under a deferred grazing strategy that consists of lower use limits, and lower stocking rates than under the No Action alternative. At times livestock would be grazing in tortoise habitat during the tortoise active seasons however with the adjusted season of use cattle grazing during most of this season would be limited to one year out of three. During the grazing of this pasture, direct competition for forage would occur between tortoise and livestock, however utilization limits on key species would be below the recommended limits of 45 percent designated in the Management plan for the Sonoran Desert Population of the Desert Tortoise in Arizona (1996) and it is expected that there would be adequate forage left for tortoise. Impacts as described above would also be true of the Sugarloaf and Highway 93 pastures.

Tortoise can be crushed by cattle however no data exist on the frequency at which cattle trample desert tortoise. Cattle likely pose a low degree of risk to adult desert tortoise and possibly sub-adults above ground, simply because cattle would likely try to avoid stepping on what essentially would appear to them to be a rock (Boarman 2002). Avery and Neibergs 1997 found that more burrows of desert tortoise were partially or completely destroyed in areas that were grazed by cattle than in a fenced area. In the rocky habitat of the Twin Mills pasture the majority of burrows would be in drainage cutbanks or under boulders and therefore unlikely to be crushed.

The proposed range improvements, fence realignment, fence extension, and maintenance of the existing range improvements would not affect tortoise. The proposed cattleguard, fence extension and fence realignment (Figure 4) are outside of tortoise habitat (Figure 16). However, according to the Terms and Conditions included in the Proposed Action, the cattleguard would be built to allow small animals, including tortoise to escape if they fall in. The maintenance or reconstruction of fences in tortoise habitat would be conducted from existing roads or on foot or horseback where road access is not available. This would reduce the danger of tortoise being run over by vehicles. To reduce the potential to harm tortoise when they are encountered during maintenance activities the tortoise handling guidelines included in the stipulations of the grazing permit would be followed (BLM 2013).

State Listed Species

Desert Bighorn Sheep: The rugged terrain within portions of the Lost Cabin and Twin Mills pastures would help to limit contact between bighorn and livestock in CQFM. Behaviorally, bighorn sheep react adversely to disturbance, and occupy habitats sensitive to change (Van Dyke et al. 1986). Livestock activities on these sites can negatively affect sheep through resource (i.e., forage, space, cover, water) exploitation. Although desert bighorn sheep generally occupy more steep terrain than cattle, overlap occurs at water sources and less rugged feeding areas. Bighorn sheep may also use relatively flatter bajadas during spring where annual forage growth first occurs. Conversely, livestock will range into higher, less accessible terrain if forage is not available in less rugged terrain. This overlap by livestock and bighorn sheep can result in competition for food, water and space, especially in an area of low forage productivity (Jones 1980, Gallizioli 1977, Bissonette and Steinkamp 1996).

Competition with livestock would be mitigated by implementing the rotation system, lowering the stocking rate, lowering use limits set on the key species, maintaining or achieving the upland health standards at the key areas and closing the Twin Mills Pasture. This would reduce competition for forage and space. Studies indicate that conservative grazing increases forage production and improves vegetation composition on degraded rangelands (Holechek et al. 1999). Achieving the standards would allow for the vegetative communities to reach or maintain the desired plant community objectives for each ecological site and help to provide adequate amount and quality of forage for bighorn. Limiting cattle use seasonally would reduce competition for space between livestock and bighorn.

The proposed well is outside of bighorn habitat. The proposed fence realignment and fence extension would not impede crossing by bighorn as these fences would be built using fence specification designed to allow bighorn to cross. Disturbance of bighorn during maintenance of the existing range improvements would occur in any one area for one day or less.

BLM Sensitive Species, Migratory Birds, and General Wildlife

Because this alternative is designed to maintain or make progress toward meeting Standard 3 it is anticipated that wildlife, sensitive species, and migratory bird habitats would improve or be maintained for most species compared to the No Action Alternative. The closing of the Twin Mills Pasture is expected to improve the frequency, cover, and productivity of key species such as bush muhly, black grama, and big galleta likewise improving habitat for those species of wildlife that use these plants for cover and foraging. Keeping waters on public land on yearlong even when livestock are not in the pasture would provide wildlife with year round water. Those species that are more water dependent such as mule deer would be able to continue to utilize an area after livestock have moved. Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources, including wildlife habitat. Implementing the proposed grazing system on these allotments to achieve DPC objectives would result in improving the ecological condition of the allotments (see "Vegetation" discussion above), as well as provide for the habitat needs (i.e., forage, cover, nesting sites, and shelter) of wildlife including special status species and migratory birds. Livestock grazing would not affect the roosting sites of bats.

Maintaining or improving key species productivity, cover, and meeting the desired plant community (DPC) objectives may likewise maintain or improve the insect populations thus indirectly maintaining or improve foraging conditions for bats, Le Conte's thrashers, and other migratory birds.

During the migratory breeding season grazing could result in the destruction of some nests of ground nesting bird species; however cattle would not be present every year in every pasture as they are under the no action alternative. Resting pastures would overall reduce the contact that livestock have with breeding birds in most years during the grazing cycles. However, an increase in contact in those years when grazing is scheduled during the breeding season would occur. And ground nests would potentially be trampled during those times. The utilization limit should provide sufficient seed production for seed eating species and residual forage for insects, which are important prey species to bats and many bird, reptiles and small mammals.

Construction of the proposed fence extension and realignment would cause a temporary disturbance to wildlife. This disturbance is not expected to occur for more than a day in any one area. Fences can form barriers to wildlife movement, but this would be mitigated by constructing the fences as proposed in a wildlife friendly manner. This allows wildlife to easily go over, under, or through the fences. Since mule deer and bighorn are some of the largest forms of wildlife in the area, other wildlife should be able to cross under the fence lines with little to no problem.

Western Burrowing Owl: The literature discusses a direct relationship with grasslands, livestock grazing, and burrowing owls. This is typically associated with prairie dog towns and the close cropped vegetation that occurs within such areas. CQFM does not have prairie dog habitat however under the Proposed Action adjustment of the stocking rate and lowering the utilization limits would allow the key species to reach a taller growth form possibly reducing the habitat feature of short vegetation that burrowing owls prefer.

Golden Eagle and Peregrine Falcon: Livestock grazing would not affect the nesting locations of these two species as their nests are found on inaccessible cliff faces. These species forage over large areas and livestock grazing is unlikely to affect the amount of available prey (rabbits and birds).

Two-colored Beardtongue: Livestock grazing has the potential to affect the two-colored beard tongue by trampling and disturbance of habitat. However, given the dispersed nature of the plant on CQFM trampling by livestock would be uncommon. Two-colored beard tongue is unlikely to be eaten by cattle as it is not a preferred forage plant for cattle and use by livestock has not been observed and would be uncommon.

4.1.13.2 Alternative 2 No Action

Under this alternative Standard 3 would continue to not be met in some of the key areas. This factor could affect wildlife by changing vegetation composition, cover, frequency, and function and reducing the amount and quality of forage for wildlife. The permittee would continue to keep water on in all pasture which would provide wildlife with year round water and allow those species that are more water dependent such as mule deer would be able to continue to utilize an area. Higher stocking rates and use limits would allow livestock to consume a greater amount of forage than under the proposed action. Livestock grazing can reduce the amount of forage available to native herbivores (e.g., deer, bighorn sheep), as well as reduce vegetative cover for ground nesting birds, burrowing rodents, and other wildlife species dependent on ground cover for protection, food, and breeding sites. Impacts to wildlife would be greatest around cattle concentration areas of use such as range improvements (e.g., cattle troughs) where vegetation receives the heaviest use.

4.1.13.3 No Grazing Alternative

Removal of cattle would maintain or facilitate progress towards meeting Standard 3. Wildlife habitat would improve or be maintained for most species as described above under Alternative 1, Proposed Action. Waters on public land maintained by the permittee potentially would be turned off and more water dependent species such as mule deer would potentially be more restricted in their use of pastures as a result of less water availability. The BLM, other agencies, or private entities could take over maintenance of the public waters and keep these waters on year-round.

4.2 Cumulative Effects

Cumulative impacts are those impacts resulting from the incremental effect of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts were analyzed in the Kingman RMP/Final EIS (BLM 1995) to which this analysis is tiered. All resource values addressed in Chapter 3 have been evaluated for cumulative effects. If there is no net effect to a particular resource from an action, then there is no potential for cumulative effects. The action alternatives encompass a 10 year time period; therefore, that timeframe was selected for analysis. For cumulative effects analysis, the geographic scope of the proposed grazing permit renewals encompasses the 131,700 acres that comprise the CQFM Allotments.

4.2.1 Past and Present Actions

Past or ongoing actions that affect the same components of the environment as the action alternatives include: recreation use, minerals development, wild horse and burro management, vegetative and wildlife habitat improvements projects, invasive, non-native species control efforts, wildland fire, and fire management activities to reduce the threat and impact of wildfire (e.g., fuels reduction projects).

Guidance issued by the Council on Environmental Quality on June 24, 2005, points out that review of past actions is required only to the extent that this review informs agency decision-making regarding the alternatives. The guidance states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” This is because a description of the current state of the environment inherently includes the effects of past actions.

4.2.2 Reasonably Foreseeable Action Scenario

It is reasonable to expect that most of the past, present, and ongoing actions discussed above are would persist and remain steady throughout the time frame considered in this analysis with relatively little change in intensity. These actions include continued grazing, potential minerals development, and population growth in the area, which would increase residential and commercial development on private lands as well as potentially increasing recreational uses on BLM lands. Continuation of these activities in the future would result in a continuation of effects similar to those that have resulted from past activities. Effects including soil and vegetation disturbance and habitat loss and fragmentation are would continue.

In approximately 10 years, these allotments will again be reviewed and analyzed for consideration of permit renewal. Successful implementation of a new grazing system, in conjunction with proposed range improvements, would assist in meeting a wide range of resource objectives and help assure that long-term productivity and health of watershed and rangeland values would be maintained. When considered with past, present, and reasonably foreseeable future actions, implementation of the grazing management systems and new range improvement projects in addition to new terms and conditions and long-term objectives would be anticipated to improve resource conditions in the CQFM Allotments. Some activities may have increased by then and may be more of a factor in analyzing cumulative effects. For example, OHV use currently occurs in the area and may increase as the population within the region increases. Wildfires also seem to be increasing in northern Arizona therefore wildfire rehabilitation and/or invasive

species may play a larger role than they currently do. No other known future actions are proposed to occur within the project area for the timeframe considered.

4.2.3 Analysis of Cumulative Effects

The Proposed Action would modify livestock management throughout the allotments and is designed to make progress toward meeting Standard 3 for rangeland health, resulting in an incremental positive cumulative effect for the area. Livestock grazing in the region has evolved and changed considerably since it began in the 1870s, and has influenced the present day condition of the resources in the allotments. Given the past experiences with livestock impacts on resources on public lands, management of livestock grazing is an important tool in ensuring the protection of public land resources. Progress could be made toward meeting the Standards and Guidelines for Healthy Rangelands with improved grazing management, increased rest from grazing, and the additional terms and conditions and range improvements proposed. The proposed action would ensure the improvement of upland vegetative communities throughout the allotments and result in beneficial effects for all resources present within the allotments.

Reasonably foreseeable future actions such as the change in stocking rate, utilization limits, rotation and deferment would be cumulatively beneficial to vegetative communities within the allotments and would be expected to aid in the maintenance/attainment of the Standards and Guidelines for Healthy Rangelands. Under the new grazing management system, invasive species that have a tendency to pioneer into areas disturbed by grazing would receive more competition from key species that are receiving less grazing pressure due to enhanced pasture management. These plant species may be more vigorous and productive throughout their life cycles because of increased rest from grazing. The KFO would continue to monitor the allotments for the presence of invasive weeds.

Increased off-highway vehicle (OHV) use may also impact soil and vegetative communities through ground disturbance and may have detrimental effects to natural plant communities, which may lead to soil erosion, particularly if off-trail use occurs.

Wildfires are common in northern Arizona and have the potential to convert native range to non-native species. Upland areas may be susceptible to erosion following wildfire in a watershed which could lead to proliferation of invasive weeds in these areas. Fire Emergency Stabilization and Rehabilitation efforts would be undertaken to help prevent the conversion of native range to non-native species. Emergency Stabilization and Rehabilitation efforts may vary in degrees of success, but when successful should help control the spread of invasive, annual species.

Overall the effects of reasonably foreseeable future invasive weed monitoring and treatment, and wildfire rehabilitation would be beneficial to upland soils and vegetation in the long term, which would indirectly contribute to attainment of the Standards and Guidelines for Healthy Rangelands.

Livestock grazing in combination with the other identified actions have and will continue to alter upland vegetation composition, cover, and densities, which may reduce suitable habitat for wildlife in some cases. Livestock grazing in combination with recreational activities may contribute to wildlife habitat fragmentation, habitat loss, alteration of travel corridors, and other disturbances caused by wildlife/human interactions. Adherence to the new grazing system, as proposed would eliminate or reduce many of these impacts by maintaining or improving perennial vegetation diversity, and by improving the frequency, cover, and composition of palatable plant species. The Proposed Action could eventually lead to improvements in habitat for wildlife that would result in a positive cumulative impact to wildlife habitats within the allotments. The improved vegetative conditions would indirectly benefit wildlife, migratory birds, and most special status species.

Increased OHV use may have an adverse effect on wildlife within the allotments by increasing habitat fragmentation, destroying suitable habitat, and decreasing the ability of the habitat to maintain long-term population numbers. Increased disturbance by OHV users could concentrate wildlife in isolated areas and could result in decreased productivity or habitat impacts.

Wildfires at higher elevations within the Arizona Interior Chaparral plant community may be beneficial to wildlife by creating diverse habitats and seral stages. However, large scale fires, especially fires in the Mohave Desert at the lower elevation and precipitation zones of much of the project area, may lead to the conversion of native habitats to red brome or other annual invasive grasses. The lower elevation plant communities of the Mohave Desert are not fire adapted. Wildfire suppression in these areas can be beneficial to wildlife by reducing the number of acres that are burned and may assist in limiting habitat fragmentation that can occur from large scale fires. Following a wildfire, rehabilitation of the burned area may occur if needed, which is expected to improve wildlife habitat through the prevention of red brome and other invasive species.

Through proper management of livestock, adequate habitat would be maintained within the allotments to support viable populations of the species discussed in this EA. Therefore, the action alternatives in combination with the past, present, and reasonably foreseeable activities considered in this analysis may impact some wildlife and their habitat, however livestock grazing would not adversely impact the viability of these populations.

Wild horse and burro populations would continue to fluctuate within the allotments. Management actions like gathers, removals, adoptions, and holding facilities as well as natural factors like drought, wildfire, and reproductive rates would all influence the degree of fluctuation within the populations. Wild horse, burro, and wildlife populations have and would continue to influence the available forage for livestock. Natural occurrences like drought and fire can also reduce the available forage in an area. Higher populations of horses and burros decrease the amount of forage available for livestock and vice versa.

Rangeland and livestock ecosystems are complex, with numerous interactions among the system's living and non-living components. Consequently, the effects of a changing climate will have direct and indirect impacts at varying spatial and temporal scales. Climatic changes such as increased atmospheric concentration of CO₂, changes in temperature, and changes in precipitation patterns have the potential to affect rangeland ecosystems in the following ways: 1) changes in decomposition rates; 2) changes in aboveground net primary production; 3) shifts in grassland species; 4) changes in evapotranspiration and runoff; and 5) changes in forage quality (Ojima et al. 1991; Breymeyer et al. 1996; IPCC 1996, IPCC 2007). The effects that these changes may have on livestock grazing in the CQFM Allotments as well as the contribution that such grazing may have to climate change are currently unknown. The lack of summer rains in the past 20 years could be contributing to decreases in big galleta and other key species as observed in the CQFM vegetation data collected for the Rangeland Health Evaluation (BLM 2010).

5 LIST OF PREPARERS

Chad Benson	Wild Horse and Burro specialist
Michael Blanton	Range Management Specialist
Donald McClure	Assistant Field Manager
Ramone McCoy	Outdoor Recreation Planner, Wilderness Specialist
Sally Oliveri	GIS specialist
Rebecca Peck	Wildlife Biologist
Wade Reaves	Fire Ecologist
Karen Reichhardt	Project Manager
Timothy Watkins	Archaeologist

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6.2 List of Acronyms and Abbreviations Used in this EA

ACEC	Area of Critical Environmental concern
AGFD	Arizona Game and Fish Department
AML	Appropriate Management Level
AMP	Allotment Management Plan
AS&G	Arizona Standards and Guidelines
AU	Animal Unit
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMEMP	Black Mountain Ecosystem Management Plan
CCC	Consultation, Cooperation and Coordination
CFR	Code of Federal Regulations
CQFM	Cerbat, Quail Springs and Fort MacEwen Allotments
DOI	Department of the Interior
DPC	Desired Plant Community
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
FLPMA	Federal Land Policy and Management Act of 1976
HA	Herd Area
HMA	Herd Management Area
HMP	Herd Management Plan
I	Improve
ID	Interdisciplinary Team
KFO	Kingman Field Office
LMNRA	Lake Mead National Recreation Area
MLA	Mohave Livestock Association

MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
OHV	Off-highway Vehicle
PM	Particulate Matter
p.z.	Precipitation Zone
RMP	Resource Management Plan
RRT	Range Resource Team
S&G	Standards and Guidelines
TGA	Taylor Grazing Act
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USC	United States Code

7 APPENDICES

7.1 Appendix A – List of Common and Scientific Names of Plants

Table 14. Common and Scientific Names of Plants by Growth Form.

Common Name	
Grasses	
3-Awn	<i>Aristida</i> sp.
Big galleta	<i>Pleuraphis rigida</i> (<i>Hilaria rigida</i>)
Black grama	<i>Bouteloua eripoda</i>
Bush muhly	<i>Muhlenbergia porteri</i>
Cheatgrass	<i>Bromus tectorum</i>
Desert needle grass	<i>Stipa speciosa</i>
Muttongrass	<i>Poa fendleriana</i>
Red brome	<i>Bromus rubens</i>
Sideoats grama	<i>Bouteloua curtipendula</i>
Shrubs and Trees	
Bladdersage	<i>Salazaria mexicana</i>
Buck brush	<i>Ceanothus greggii</i>
Catclaw acacia	<i>Acacia greggii</i>
Cheeseweed	<i>Hymenoclea salsola</i>
Chuckwalla's delight	<i>Bebbia juncea</i>
Desert rock-pea	<i>Lotus rigidus</i>
Flat-top buckwheat	<i>Eriogonum fasciculatum</i>
Globe mallow	<i>Sphaeralcea ambigua</i>
Greythorn	<i>Zizyphus obtusifolia</i>
Mesquite	<i>Prosopis velutina</i>
Mormon tea	<i>Ephedra nevadensis</i>
Menodora	<i>Menodora scabra</i>
Range ratany	<i>Krameria parviflora</i>
Shrubby buckwheat	<i>Eriogonum wrightii</i>
Winterfat	<i>Eurotia lanata</i>
White bursage	<i>Ambrosia dumosa</i>
White-stem paperflower	<i>Psilostrophe cooperi</i>
White ratany	<i>Krameria grayii</i>
Wolfberry	<i>Lycium andersonii</i>
Wooly-fruited bursage	<i>Ambrosia eriocentra</i>
Forbs	
Two-colored beard tongue	<i>Penstemon bicolor roseus</i>
Malta starthistle	<i>Centaurea melitensis</i>
Puncture vine	<i>Tribulus terrestris</i>

Common Name	Scientific Name
Sahara mustard	<i>Brassica tournefortii</i>
Mediterranean grass	<i>Schismus barbatus</i>

7.2 Appendix B Monitoring Protocol and Criteria for Stocking Rate Analysis

7.2.1 Monitoring under Proposed Action and No Action

BLM resource specialists would periodically monitor the allotments over the 10-year term of the grazing permit to ensure that the fundamentals or conditions of rangeland health are being met within the allotments, in accordance with 43 CFR 4180. If monitoring indicates current livestock grazing practices are causing non-attainment of resource objectives, the BLM could modify the terms and conditions of a grazing permit (i.e., number of cattle, turn out dates, removal dates, etc.) temporarily or on a more long-term basis, as deemed necessary, after consultation with the livestock permittee.

Evaluate the stocking rate over the next three years using actual use data and utilization data collected by pasture every year.

BLM would monitor Swicker Spring determine the efficacy of the grazing system and would identify future management changes, if needed.

7.2.2 Stocking Rate Analysis

Grazing Capacity or Stocking Rate Analysis: The following is the process for determining the grazing capacity or initial stocking rate for CQFM allotments. Grazing capacity refers to the maximum stocking rate possible year after year without causing damage to vegetation or related resources (Holechek et al. 1999).

The thirteen year average for each allotment from 1998 to 2010 is presented in the table below (Table 15). The averages were used as the base stocking rate. The average for each allotment was used to allocate forage for each pasture.

Cerbat Allotment can support 588 AUMs or 49 AUs.

The Quail Springs Allotment was allocated 1015 AUMs or 85 AUs.

The Fort MacEwen Allotment was allocated 834 AUMS or 69 AUs. The Twin Mills Pasture of the Fort MacEwen Allotment was allocated 411 AUMs or 34 AUs. These AUMS were removed because of the proposed closure of Twin Mills Pasture. The Valley Pasture has approximately 12,000 acres of private uncontrolled land which cannot be used in the calculation of AUMs.

The initial stocking rate for CQFM is 203 AUs.

Table 15. Thirteen year average stocking rate for CQFM.

Year	Cerbat AUMs	Quail Springs AUMs	Fort MacEwen AUMs
1998	1953	2397	1437
1999	518	1757	1777
2000	1150	632	1777
2001	679	367	626
2002	132	0	0
2003	371	522	828
2004	211	340	667
2005	335	162	1242
2006	391	297	759
2007	391	1782	1777
2008	502	1836	1766
2009	338	991	1766
2010	670	2106	1769
Average	588	1015	1245

7.2.3 Desired Plant Community Objectives Proposed Action and No Action

These allotments would be managed to achieve the desired plant community (DPC) objectives included in the *Cerbat, Quail Springs, and Fort MacEwen Rangeland Health Evaluation*. The evaluation lists and evaluates achievement of the allotment DPC objectives. These objectives were developed by an ID Team and expressed in species composition and perennial vegetative cover (Table 15 through Table 31) See Appendix B for a list of the common and scientific names of plants.

Table 16. Desired Plant Community Objectives for the Cerbat Allotment Key Area 1, Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama Bush muhly 3-Awn	26% to 47%
Flat-top buckwheat Mormon tea Range ratany Bladdersage	3% to 12%
Maintain total live perennial vegetative cover: 20% to 30%	

Table 17. Desired Plant Community Objectives for the Cerbat Allotment Key Area 2, Granitic Hills 10 to 13" p.z.

Key Species	Composition Objective
Big galleta Black grama Desert needle grass 3-Awn	17% to 33%
Flat-top buckwheat Mormon tea Range ratany Bladdersage	31% to 45%
Maintain total live perennial vegetative cover: 25% to 35%	

Table 18. Desired Plant Community Objectives for the Cerbat Allotment Key Area 3, Granitic Hills 10 to 13" p.z.

Key Species	Composition Objective
Black grama Desert needle grass 3-Awn	17% to 33%
Flat-top buckwheat Buck brush	31% to 45%
Maintain total live perennial vegetative cover: 25% to 35%	

Table 19. Desired Plant Community Objectives for the Cerbat Allotment Key Area 17, Clay Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama Bush muhly	22% to 38%
Flat-top buckwheat Mormon tea Range ratany	11% to 23%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 20. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 5, Clay Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama Bush muhly	22% to 38%
Wolfberry Mormon tea Winter fat White-stem paperflower	1% to 12%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 21. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 6, Clay Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama Bush muhly	21% to 35%
Wolfberry Mormon tea Winter fat White-stem paperflower	2% to 6%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 22. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 8 (within Joint Use Area), Basalt Hills 10-13" p.z.

Key Species	Composition Objective
Big galleta Desert needle grass 3-Awn	9% to 24%
Flat-top buckwheat Mormon tea Range ratany Bladdersage Wolfberry	17% to 43%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 23. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 9, Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama	20% to 35%
Flat-top buckwheat Mormon tea Range ratany Bladdersage	3% to 12%
Maintain total live perennial vegetative cover: 20% to 30%	

Table 24. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 10, Granitic Hills 10-13" p.z.

Key Species	Composition Objective
Black grama Sideoats grama Desert needle grass 3-Awn Bush muhly	17% to 38%
Flat-top buckwheat Menodora	30% to 45%

Key Species	Composition Objective
Buck brush	
Maintain total live perennial vegetative cover: 25% to 35%	

Table 25. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 14, Granitic Hills 10-13" p.z.

Key Species	Composition Objective
Sideoats grama Desert needle grass Black grama 3-Awn	16% to 33%
Flat-top buckwheat Shrubby buckwheat Mormon tea Range ratany Bladdersage	31% to 45%
Maintain total live perennial vegetative cover: 20% to 40%	

Table 26. Desired Plant Community Objectives for the Quail Springs Allotment Key Area 15, Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta Black grama	20% to 35%
Flat-top buckwheat Mormon tea Range ratany	2% to 9%
Maintain total live perennial vegetative cover: 20% to 40%	

Table 27. Desired Plant Community Objectives for the Fort MacEwen Allotment Key Area 11 (within Joint Use Area), Basalt Hills 6 to 10" p.z.

Key Species	Composition Objective
Big galleta Bush muhly 3-Awn	15% to 8%
Flat-top buckwheat White ratany Range ratany	3% to 15%
Maintain total live perennial vegetative cover: 20% to 30%	

Table 28. Desired Plant Community Objectives for the Fort MacEwen Allotment Key Area 12, Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta	1% to 5%
Flat-top buckwheat	3% to 15%

Key Species	Composition Objective
Mormon tea Range ratany	
Maintain total live perennial vegetative cover: 10% to 20%	

Table 29. Desired Plant Community Objectives for the Fort MacEwen Allotment Key Area 13, Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Big galleta	1% to 5%
Flat-top buckwheat Mormon tea Range ratany	2% to 10%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 30. Desired Plant Community Objectives for the Fort MacEwen Allotment Key Area 18 (within Joint Use Area), Basalt Hills 10-13" p.z.

Key Species	Composition Objective
Muttongrass Big galleta 3-Awn	2% to 10%
Shrubby buckwheat Flat-top buckwheat Mormon tea Range ratany Bladdersage	17% to 35%
Maintain total live perennial vegetative cover: 10% to 20%	

Table 31. Desired Plant Community Objectives for the Fort MacEwen Allotment Key Area 20 (within Joint Use Area), Limy Hills 10-13" p.z.

Key Species	Composition Objective
Big galleta 3-Awn	10% to 15%
Mormon tea Range ratany	6% to 15%
Maintain total live perennial vegetative cover: 15% to 20%	

Table 32. Desired Plant Community Objectives for the Fort MacEwen Allotment Area 21 (aka Lost Cabin Spring) (Squaw Pocket Pasture) (within Joint Use Area), Sandy Loam Upland 10-13" p.z.

Key Species	Composition Objective
Bush muhly Big galleta	2% to 10%
Mormon tea Wolfberry	2% to 10%
Maintain total live perennial vegetative cover: 10% to 20%	

7.3 Appendix C – Terms and Conditions of 1980 Allotment Management Plan

ALLOTMENT MANAGEMENT PLAN
CERBAT, QUAIL SPRINGS & FORT MACEWEN ALLOTMENTS
CERBAT/BLACK MOUNTAIN PLANNING UNITS

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CERBAT, QUAIL SPRINGS AND FORT MACEWEN
ALLOTMENT MANAGEMENT PLAN

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1. Introduction

This Allotment Management Plan (AMP) has been prepared as outlined in the Program Document developed subsequent to filing the Cerbat/Black Mountain Grazing Environmental Statement. An Allotment Analysis has been completed as a prologue to this document and is incorporated herein by reference. The analysis is on file at the Kingman Resource Area Office. The need to increase productivity of public rangeland for multiple use benefit has been clearly defined in Section 2(b) 2, of the 1978 Public Rangeland Improvement Act. The evolutionary development of a AMP will necessitate a continuous flow of information derived from rangeland monitoring and research with site specific overation. This research will serve as positive support for management decisions concerned with meeting production demands placed on rangeland plant resources by an ever increasing human population.

This Allotment Management Plan covers the Cerbat, Quail Springs and Fort MacEwen Allotments. Unless otherwise specified, reference to the AMP will refer to the above three allotments as one, since they are all operated by the same permittee, Mr. Bill Hamilton.

II. Objectives for Ephemeral/Perennial Range

(Quail Springs, Cerbat and Unit A of Fort MacEwen Allotment)

A. GENERAL

The objective of this plan is to improve the condition and trend of the public rangeland in this allotment in line with the multiple use objective stated in the Livestock Grazing Program document for the Cerbat/Black Mountain Planning Units. Due to the evolutionary nature inherent in the development of a successful AMP, the objectives for this allotment management plan are intentionally broad in scope (refer to alternative B, Cerbat/Black Mountain E.S.). This alternative provides that grazing systems be developed over a period of time and be modified in line with data derived from rangeland monitoring and research.

B. SPECIFIC

1. VEGETATION MANAGEMENT

a. Ensure the gross physiological requirements of plant growth and development are met for the following "Key Forage Species," in the following pastures;

CERBAT ALLOTMENT

NINETY-THREE PASTURE

Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Sphaeralcea spp. (Globe Mallow)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)
Menodora spp. (Twinberry)
Salizaria mexicana (Mexican Bladdersage)

HOUSE PASTURE

Bouteloua eriopoda (Black Grama)
Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Ephedra spp. (Mormon Tea)
Salizaria mexicana (Mexican Bladdersage)

CERBAT PASTURE

Bouteloua curtipendula (Side Oats Grama)
Stipa speciosa (Desert Needlegrass)
Ceanothus greggii (Desert Ceanothus)
Ephedra spp. (Mormon Tea)

SECTION NINE PASTURE

Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Eriogonum fasciculatum (Flat-Top Buckwheat)

TENNESSEE PASTURE

Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Eriogonum fasciculatum (Flat-Top Buckwheat)

QUAIL SPRINGS ALLOTMENT

QUAIL SPRINGS PASTURE

Bouteloua eriopoda (Black Grama)
Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Sphaeralcea spp. (Globe Mallow)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)
Salizaria mexicana (Mexican Bladdersage)

NORTHWEST PASTURE

Hilaria rigida (Big Galleta)
Sphaeralcea spp. (Globe Mallow)

MARBLE CANYON PASTURE

Stipa speciosa (Desert Needlegrass)
Stipa coronata (Crested Needlegrass)
Ceanothus greggii (Desert Ceanothus)

BLACK TANK PASTURE

Bouteloua eriopoda (Black Grama)
Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Sphaeralcea spp. (Globe Mallow)
Ephedra spp. (Mormon Tea)

BIG WASH PASTURE

Bouteloua eriopoda (Black Grama)
Hilaria rigida (Big Galleta)
Muhlenbergia porteri (Bush Muhly)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)
Salizaria mexicana (Mexican Bladdersage)

SUGARLOAF PASTURE

Hilaria rigida (Big Galleta)
Sphaeralcea spp. (Globe Mallow)
Acacia greggii (Catclaw)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)

EAST BIG WASH PASTURE

Stipa speciosa (Desert Needlegrass)
Stipa coronata (Crested Needlegrass)
Ceanothus greggii (Desert Ceanothus)
Ephedra spp. (Mormon Tea)

FORT MACEWEN ALLOTMENT

TWIN MILLS PASTURE

Hilaria rigida (Big Galleta)
Sphaeralcea spp. (Globe Mallow)
Ephedra spp. (Mormon Tea)
Atriplex canescens (Fourwing Saltbush)

VALLEY PASTURE

Hilaria rigida (Big Galleta)
Atriplex canescens (Fourwing Saltbush)

LOST CABIN PASTURE

Hilaria rigida (Big Galleta)
Sphaeralcea spp. (Globe Mallow)
Acacia greggii (Catclaw)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)

SQUAW POCKET PASTURE

Hilaria rigida (Big Galleta)
Sphaeralcea spp. (Globe Mallow)
Ephedra spp. (Mormon Tea)
Eriogonum fasciculatum (Flat-Top Buckwheat)

- * b. Provide rest (non-use) on twenty to fifty percent of the allotment at any given period during the year.
- c. Limit the average utilization on key forage species to 42% of the current years growth within key areas. This utilization limit (42% vs 50%) represents an adjustment for forage existing on private, uncontrolled land.
- d. Reduce competition of snakeweed with key species and to increase the overall abundance of key species through integrated management techniques (e.g. biological control, chemical control, reseeding, prescribed burning, etc.)

2. WILDLIFE MANAGEMENT

- a. Improve habitat for deer, bighorn, and small game species by providing adequate food resources, water, cover and space, with primary emphasis placed on deer and bighorn habitat. These efforts will include but not be limited to maintaining adequate forage reserves (AUM's), development of new waters and resting pastures as noted in objective 1b above. Objectives for specific species of wildlife are pending development of the Cerbat/Music Mountain Habitat Management Plan.

3. WATERSHED MANAGEMENT

- a. Reduce erosion and stabilize the watershed by increasing the overall ground cover and ensuring adequate vegetative litter (e.g. 500-600 lbs/A) on an allotment wide basis.

b. Develop specific land rehabilitation projects on areas where erosion is or has the potential of becoming severe (e.g. gully plugging in Sugarloaf pasture.)

4. LIVESTOCK MANAGEMENT

a. Maintain light stocking rates and proper livestock distribution to provide a forage reserve for drought years.

III. OBJECTIVES FOR EPHEMERAL RANGE

(UNIT B OF FORT MACEWEN ALLOTMENT)

A. Harvest up to 50% of ephemeral forage by licensing domestic livestock.

B. Maintain suitable watershed condition, and provide for sufficient seed source for future growth by leaving 50% of each ephemeral forage crop.

C. Reserve the existing small amount of perennial forage for wildlife and burro's.

D. Provide for wildlife and burro use on ephemerals within the 50% proper use level as noted in A above.

IV. OBJECTIVES SET BY PERMITTEE

a. Use different "work grounds" from year to year to avoid trampling damage.

b. Monitor the vegetation in pastures with and without livestock in them to determine actual use made of forage by rabbits and rats. —

c. Maintain the key forage plants in a healthy condition to enable the plants to respond quickly when moisture is available for plant growth.

V. RANGE IMPROVEMENTS

A. EXISTING

For the existing range improvements, see the allotment map.

(Appendix I).

B. Proposed Range Improvements (See overlay for Appendix 1)

Summary Appendix 32

Job Name	Type	Size (units)	Sequence of Installation	Estimated Cost	Location	Maintenance Responsibility
Detrital Wash	Pipe, tank & trough	1.5 miles 20,000 gal.	81 82 84	11,920.00	T. 23 N., R. 10 W., Sec. 6 NE 1/4	Permittee
Twin Mills	Pipe	4 miles	81 75	21,120.00	T. 23 N., R. 20 W., Sec. 3, 4, 11, 14	Permittee
Squaw Pocket Reservoir	Dirt Tank	12 miles	81 82 83	6,000.00	T. 24 N., R. 21 W., Sec. 24 NE 1/4	Permittee
Ft. MacEwen SW Bdy. Fence	Fenceline	12 miles	81 82 83	36,000.00	T. 22 N., R. 20 W., T. 23 N., R. 21 W.	Permittee
Calico Peak	Pipeline	1 mile	81 82 83	5,280.00	T. 24 N., R. 20 W., Sec. 20 NE 1/4	Permittee
House	Fenceline	1 1/2 mile	81 82 83	4,500.00	T. 24 N., R. 18 W., Sec. 21, 28, 34	Permittee
Middle Big Wash	Fenceline	2 miles 1 cattleguard	81 82 83 84	15,000.00	T. 24 N., R. 18 W., Sec. 28 NW 1/4	Permittee
House	Horizontal Well storage	20,000 gal.	81 82 83	6,000.00	T. 24 N., R. 18 W., Sec. 32 NE	Permittee
Animal Burro	Well Trough	20,000 gal.	81 84	6,000.00	T. 24 N., R. 18 W., Sec. 15 SW	Permittee
N. Big Wash	Seal Dirt Tank	1	81 82 83	2,000.00	T. 24 N., R. 18 W., Sec. 15 SW 1/4	Permittee
S. Big Wash	Seal Dirt Tank	1	81 82 83	2,000.00	T. 24 N., R. 18 W., Sec. 21 NE 1/4	Permittee

not feasible

Not Feasible

Completed

Summary of Fence 1/2 mile 81 82 83 84 2000
Lost Cabin 2000 yds 81 82 83 84 4,000
21,000

EA# 12-026-82-38 (Sold to
... ..)

B. Proposed Range Improvements cont.

Job Name	Type	Size (units)	Sequence of Installation	Estimated Cost	Location	Maintenance Responsibility
7 Catch 22	Dirt Tank	1	80	6,000.00	T. 24 N., R. 20 W., Sec. 22 NW1	Permittee
Calico Peak	Well, Wind-mill, tank, & trough	15,000 gal.	80 91 Completed	10,000.00	T. 24 N., R. 18 W., Sec. 20 NW1	Permittee
93	Dirt Tank	1	80 84	6,000.00	T. 23 N., R. 19 W., Sec. 24 SW	Permittee
Sugarleaf	Dirt Tank	1	80 83 Deleted	6,000.00	T. 23 N., R. 19 W., Sec. 14 NW1	Permittee
Big Wash H.W.	Maintenance	1	81	5,000.00	T. 24 N., R. 18 W., Sec. 17 SW1	Permittee
Burns Spring	Pipeline, tank & trough	1 each	82	12,000.00	T. 23 N., R. 20 W., Sec. 4	Permittee
Gerbat Pasture	Pipeline	1 mile	82 Deleted	5,280.00	T. 23 N., R. 18 W., Sec. 3	Permittee
Marble Canyon	Catchment	1	82	15,000.00	T. 24 N., R. 18 W., Sec. 4	Permittee
Marble Canyon Pilgrim	Pipeline	1 Mile	80	6,000.00	T. 23 N., R. 19 W., Sec. 18 & 7	Permittee

Rock Tank Pipeline 5 miles 81 40,000

Marble Canyon
Pipe Force

Producers Pipeline
House Dirt Tank

T 25N, 8W Sec 32

T 23N, 19W Sec 18, 8 to be done by all the

T 23N, 19W Sec 18 to be done by all the

VI. GRAZING MANAGEMENT

A. SYSTEM

The grazing system is patterned after the "Best Pasture" concept outlined in the Jornada Experimental Range, Report #1, dated May 1, 1969.

A minimum of two meetings per year will be scheduled with the permittee and BLM personnel to jointly decide which pastures will be rested and used during the year. The meeting dates will be in September or October and late June or early July. A tour of the allotment will be held in conjunction with each meeting and decisions for rest will be made based on the AMP objectives, degrees of utilization, climatic factors, and herd management considerations.

In concert with the AMP objectives, general guidelines for rest and use for pastures or groups of pastures are as follows:

CERBAT
EAST BIG WASH
MARBLE CANYON

Provide Spring-Summer rest from April through mid-September, Use each year mid-September through March, providing there is adequate forage in other pastures.

QUAIL SPRINGS
BIG WASH
HOUSE
93
SUGARLOAF X
BLACK TANK

Provide Summer rest (June through mid-September) for selected pastures dependent on amount and timing of rainfall, spring rest (March through May) one year in three, provided there is adequate forage in other pastures. Use selected pastures, March through mid-September.

VALLEY

Provide Summer rest (June through mid-September) as appropriate for Big Galleta Grass. Use annuals when available leaving 400-600 lbs/acre for mulch, seed production, and watershed protection. This pasture will be used to the extent possible, especially in good ephemeral years, to relieve grazing pressure on the remainder of the allotment.

TWIN MILLS
SQUAW POCKET
LOST CABIN

Provide Spring rest for selected pastures one year in three. Use selected pastures January through May, providing there is adequate forage.

SECTION 18
TENNESSEE
SECTION 9
NORTHWEST

Use as holding pastures as appropriate.

EPHEMERAL (UNIT B.)

Use in accordance with the objectives outlined in Section III of this AMP.

B. LIVESTOCK NUMBERS

The grazing preference on public lands is 1974 AUM's for the Cerbat Allotment, 2610 AUM's for the Quail Springs Allotment, and 2448 AUM's for the Fort MacEwen Allotment.

The initial stocking rate will be 637 cows yearlong for the three allotments combined in accordance with the grazing use adjustment agreements dated 9-3-80 for the Quail Springs and Cerbat Allotments and the Final Decision, dated 8-25-80 for the Fort MacEwen Allotment. At 83% public use, the initial stocking rate equates the current preference of (4584 AUM's) for the Quail Springs and Cerbat Allotments combined and active preference of (1769 AUM's) for the Fort MacEwen Allotments. (See Appendix II).

For the Fort MacEwen Allotment, the 679 AUM difference between the current preference (2448 AUM's) and the active preference (1769 AUM's) will be held in suspension (43 CFR 4110.3-2 (b)), pending determination of forage production potential.

At the end of a three-year period ending February 28, 1984, the stocking rate for the Quail Springs and Cerbat Allotments may be adjusted in accordance with the results of the utilization studies conducted by the Bureau of Land Management.

For the three allotments combined, annual adjustments in stocking rates may be made based on an average utilization limit of 42 of the key forage species within key areas.

Permanent adjustments in preference will be based only on Long Term rangeland monitoring as outlined in Section VII of this AMP.

C. FLEXIBILITY

The permittee may increase the livestock numbers up to a maximum of 800 animal units during the eight month period of October through May, providing forage is not in short supply due to drought, fire, or other natural causes. If he elects to run 800 animal units during this period, he would then have to reduce to 311 animal units during the four month period of June through September.

Adjustments in livestock numbers less than the maximum are allowed during the same time period, providing, total use for the above grazing periods do not exceed 7647 AUM's.

In years of adequate forage, supplemental licenses for extra livestock will be considered upon proper application to the Bureau of Land Management.

D. BILLING PROCEEDURE

An advance billing will be used for the maximum allowable numbers prior to each grazing year (March 1 - February 28), to be paid quarterly. Initially, this number will be 637 animal units yearlong.

The permittee will maintain actual use records showing when, where (by pasture), and how many livestock (by age class) that utilized the allotment during the grazing year. The actual use report will be presented to the BLM annually between the 1st and 15th of March. Where the amount of grazing use reported on the actual use grazing reports is less than the amount of use covered by the advance bills, refunds will be made for the difference. No billings are issued and no refunds are made where the amounts are less than \$5.00.

VII. STUDIES AND EVALUATION

A. NARRATIVE

The objective of the monitoring program is to provide statistically sound data concerning the influence of livestock grazing on the growth, development, and reproduction of "key" plant species. These data will be used to modify this AMP as necessary to coincide with the management objectives stated herein as well as those multiple use objectives outlined in the Proposed Livestock Grazing Program Document, Cerbat/Black Mountain Planning Units. Modifications may include, but are not limited to adjustments in stocking rates, grazing schedules, range improvements, range study plot locations, and AMP objectives.

The BLM Manual will be used as the guideline for conducting the primary range studies (i.e. actual use, utilization, trend, and climate).

This monitoring program will require the establishment of permanent study areas. All investigations will be conducted on these specific areas and replicated as dictated by the number, type and importance of range sites on the allotment.

Supplemental studies will be used to establish baseline data for "key" species. These determinations will be made prior to grazing treatment and will include phenological data and species composition (Plant Frequency Method).

Control over treatment (i.e., livestock numbers/actual use) will be monitored through billing procedures. Utilization measurements will be made at/or near the end of the defined grazing period. Trend data will be collected at the end of the growing season. The actual date for this determination may vary among sites from May to August depending on the relative composition of cool-warm season species on respective study areas.

Utilization on "key" grass species will be determined using the Grazed Class Photo Guide Technique. Utilization on "key" browse species will be

determined by sampling plants that occur within respective transects. Data collected to determine browse utilization and plant response to defoliation will include:

- A. Overall plant height (measured from soil surface)
- B. Crown diameter
- C. Subsampling
 - length of 5 longest shoots/plants
 - length of 5 shortest shoots/plants
- D. Evidence of utilization (grazed vs. ungrazed)

A minimum of 10 browse plants by species/transect will be sampled to obtain mean (\bar{x}) utilization and response data.

Composite soil samples will be collected at each study area to aid in site potential determination. Each set of study replicates will be equipped with at least one rain guage. Depending on the number and importance of heterogeneous sites, a minimum of three study areas will be established on relatively homogeneous areas representing a specific plant community. At least one 20' x 20' enclosure will be constructed for each set of replications receiving the same treatment.

B. STUDY PLOT LOCATIONS

Refer to map in Appendix I.

C. TIME TABLE

The tentative schedule for data collection is as follows:

- a. phenology: On or prior to initiation of grazing treatment.
- b. utilization: At or near the mid-point and end of grazing treatment.
- c. trend: At or near the end of growing season following a nonuse period. The exact date for trend and phenological determinations may vary dependent on the relative % composition of cool/warm season species

occurring on individual transects.

D. COORDINATION

Every effort will be made to ensure that both allottee and Bureau personnel are present during data collection and evaluation. The allottee will be given notice at least two weeks, prior to the tentative data collection date. If the allottee is unable to be present, Bureau personnel will collect the necessary data.

VIII. EVALUATION

Monitoring data, management system effectiveness and other pertinent factors relating to the overall success of this AMP will tentatively be evaluated on an annual basis (March). This evaluation will be conducted by the allottee, BLM and other consulting agencies. This process will be used to revise this AMP to meet allotment management objectives and/or other land use needs. Revisions will be conducted only after thorough consultation with permittee or his successor or assigns (43 CFR 4120.2-3(c)).

IX. CONCURRENCE

ACCEPTED BY:

Bill Hamilton
PERMITTEE

September 17, 1980
DATE

Brent Haines
RANGE CONSERVATIONIST

September 17, 1980
DATE

Roger D. Taylor
AREA MANAGER

Sept. 23, 1980
DATE

INCLUDED IN PERMIT/LEASE BY DECISION OF:

W. K. Barker
DISTRICT MANAGER

9/30/80
DATE

APPENDIX II

	<u>AUM's</u>	<u>PERCENT USE</u>
<u>PUBLIC LAND</u>		
*Quail Springs	2610	
*Cerbat	1974	
**Fort MacEwen	<u>1769</u>	
SUB-TOTAL	6353	83
<u>STATE LEASE LAND</u>		
Quail Springs	123	
Cerbat	107	
Fort MacEwen	<u>72</u>	
SUB-TOTAL	302	4
<u>CONTROLLED PRIVATE LAND</u>		
Quail Springs	175	
Cerbat	16	
Fort MacEwen	<u>801</u>	
SUB-TOTAL	992	<u>13</u>
GRAND TOTAL	7647	100

* Based on Agreement dated September 3, 1980.

**Based on Final Decision dated August 25, 1980.